TRANSFORMING CONFLICT INTO EFFECTIVE ACTION: A CASE STUDY OF THE EFFECTS OF ANTHROPOGENIC SOUND ON MARINE MAMMALS

by

Jill K. Lewandowski
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Committee:

	Dr. Lee Talbot, Dissertation Director
	Dr. Al Fuertes, Committee Member
	Dr. Joseph Maxwell, Committee Member
	Dr. Chris Parsons, Committee Member
	Dr. Alan Thornhill, Committee Member
	Dr. Albert Torzilli, Graduate Program Director
	Dr. Robert Jonas, Department Chairperson
	Dr. Donna M. Fox, Associate Dean, Office of Student Affairs & Special Programs, College of Science
	Dr. Peggy Agouris, Dean, College of Science

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Fairfax, VA

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at George Mason University

By

Jill K. Lewandowski
Master of Science
George Mason University, 2006
Bachelor of Arts
University of Virginia, 1993

Director: Lee M. Talbot, Professor
Department of Environmental Science and Policy

Spring Semester 2015
George Mason University
Fairfax, VA

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Dedication

There is absolutely no way this degree and dissertation could have been completed without constant support from my dedicated husband, Jimmy. Having both parents working full-time while raising a family is a considerable feat by itself. Adding a doctoral program takes it beyond most people's idea of sanity and reason. Yet, Jimmy was constantly supportive of my goals, even pushing me to continue during the times I was ready to pack it in. Although the pressures of balancing all commitments have worn us both down at times, I also know it has reinforced the strength of our partnership and our ability to work as a team. I am forever grateful (and promise to go on the *Amazing Race* with you if we ever get the chance!).

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Abstract

TRANSFORMING CONFLICT INTO EFFECTIVE ACTION: A CASE STUDY ON THE EFFECTS OF ANTHROPOGENIC SOUND ON MARINE MAMMALS

Jill K. Lewandowski, Ph.D.

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Dissertation Director: Dr. Lee M. Talbot

Like many wicked environmental problems of our time, marine sound and its potential effects on marine mammals is characterized by high levels of scientific uncertainty, diversified values across many stakeholder groups, political and regulatory complexities, and a continually evolving ecological and social environment. The history of the conflict and the relationships between major actors on the issue is now rooted firmly in identity conflict where prejudices lead to avoidance of working together. What results is continued controversy, failed management decisions, litigation and an increasing frustration by all parties on why a better solution cannot be found.

Ultimately, the intractability of an issue is not about the science, nor will the science ever tame the issue on its own. Rather, the issue is intractable because of the conflict *between* people about the most appropriate path forward. It is then imperative to

understand, address, and transform this conflict in order to move off the decision carousel toward improved conservation outcomes and sustainable decisions for all.

This research used an explanatory case study approach to quantitatively and qualitatively investigate the context and reasoning underlying the conflict on the effects of anthropogenic sound on marine mammals. Three methods were used in order to triangulate the data, and thus add rigor, including: (1) a document review of 230 publications; (2) exploratory interviews with 10 conflict transformation experts and semi-structured interviews with 58 marine sound stakeholders; and (3) participant review of selected analyses. Data elucidate how different stakeholder groups define the problem and potential solutions, how they see their role and view the role of other stakeholders, specific experiences that increased or reduced conflict, and design preferences for a collaborative effort. These data are combined with conflict transformation principles to provide recommendations for a collaborative, transformative framework designed to help build capacity for groups to work together and ultimately tame this wicked issue.

Chapter 1
Describing the Problem

Management of marine resources is fraught with highly complex and controversial issues - what have been called wicked environmental problems (WEPs) or intractable issues (Ludwig et al., 2001; Kreuter et al., 2004; Balint et al., 2011). WEPs are characterized as issues having high levels of scientific uncertainty on risks, intermingling political/regulatory complexities, regularly evolving ecological and social environments, and diverse stakeholder values and viewpoints. It is also often rooted in identity-level conflict where parties make assumptions and hold prejudices about others based on their group affiliation that lead to avoidance of working together (Lederach, 2003; Kriesberg, 2011; Madden and McQuinn, 2014). Given this mix of challenges, productive decision-making is difficult at best (Rittel and Weber, 1973; Turnpenny et al., 2009). Couple this with traditional federal linear decision-making approaches, and effective marine resource management can be near impossible (Balint et al., 2011).

Ultimately, the wickedness of the issue is not about the science, nor will the science ever tame the issue on its own. Rather, the issue is intractable because of the conflict *between* people about the most appropriate path forward. It is then imperative to understand, address, and transform this conflict in order to move off the decision carousel and toward improved conservation outcomes and sustainable decisions.

This chapter will provide an overview of a current WEP: anthropogenic sound and its effects on marine mammals. It will show why this issue has become wicked and how its intractability is reinforced by current linear federal decision-making approaches, intra-group and inter-group identity conflict and the status of relationships among stakeholders. It will then describe the value an alternative framework, built on conflict transformation, in getting diverse interests (technical and non-technical) to the table to collaborate, create trade-offs and synergies and, ultimately, foster effective action. The remaining chapters of the dissertation will go into greater detail, using data results, to illustrate these points.

Section 1.01 What makes an issue wicked?

WEPs, or seemingly intractable conservation issues, share common characteristics, including: (1) a high level of scientific uncertainty, (2) political and regulatory complexity, (3) diversified interested party interests, (4) a history of conflict and resulting distrustful relationships (often at the level of identity conflict); and (5) decision-making approaches that only increase conflict and intractability. Scientific uncertainty leads to many unknowns regarding the risks of decision options under consideration. Diversified interested party perspectives (influenced heavily by individual values) lead to disagreements on the problem definition and the correct path forward. Political complexities and a regularly evolving ecological and social environment further complicate solution building. Decision processes are often too simplified for the complexity of the issue, and this only lends to increased conflict. It is the mix of these

characteristics that leads to an issue becoming wicked or intractable and remaining so (Kreuter et al., 2004; Balint et al., 2011; Madden and McQuinn 2014).

Section 1.02 Identity as a basic human need

'Human needs theory' finds that conflict cannot be resolved until fundamental human needs are met. Burton (1986) identified nine fundamental human needs, including identity. Burton, and other human needs theorists, sees needs as distinctive from interests in that interests are negotiable and needs are not.

Table 1.1 Burton's definitions of human needs

Need	Definition
distributive justice	socially just allocation of goods in a society
safety, security	need for structure, predictability, stability, and freedom from fear and anxiety
belongingness, love	need to be accepted by others and to have strong personal ties with one's family, friends, and identity groups
self-esteem	need to be recognized by oneself and others as strong, competent, and capable; have influence on her/his environment
personal fulfillment	need to reach one's potential in all areas of life
identity	a sense of self in relation to the outside world; conflict arises when one's identity is not recognized as legitimate, considered inferior or threatened by others with different identifications
cultural security	related to identity, the need for recognition of one's language, traditions, religion, cultural values, ideas, and concepts
freedom	having no physical, political, or civil restraints; having the capacity to exercise choice in all aspects of one's life
participation	be able to actively partake in and influence civil society

Given the importance of identity as a basic human need, is it not surprising that intractable issues, likes WEPs, are often mired in identity conflict. Identity-based conflict is where parties make assumptions and hold prejudices about others based on

their group affiliation. Trust is low among these parties and each assumes that an individual from another group will act or think a certain way and that there is little hope for change. Such a cycle of conflict will continue unless actions are taken to build the capacity of stakeholders to see past the established positions and affiliations, learn to communicate openly and uncover common ground where it may exist (Fisher et al., 1991; Lederach, 2003; Kriesberg, 2011; Madden and McQuinn, 2014). Transforming the identity-based conflict is the central and key step to taming the wickedness of the issue.

Section 1.03 Background on marine mammals and sound

Figure 1.1 Large commercial ships pass through important feeding grounds of the North Atlantic right whale (photo credit: Kate Sardi for the Stellwagen Bank National Marine Sanctuary/NOAA)

The effects of anthropogenic sound, or human-made sound, on marine mammals is a good example of a marine conservation issue gone wicked. Anthropogenic sound in the ocean environment is produced during many critical human activities; examples include vessel operation for commercial fisheries and the transport of goods/services, exploration, construction and production of both traditional (e.g., oil and gas) and renewable (e.g., wind and tidal power) energy sources, exercises for military preparedness and national defense, dredging of offshore sand for beach and barrier island improvements (hurricane protection), seismic research for earthquake detection, and even

recreational boating (e.g., nature tours, fishing trips, weekend boaters) (Richardson et al., 1995; Nowacek et al., 2007; Weilgart, 2007; Southall et al., 2007; OSPAR, 2009). From the perspective of the biological environment, however, anthropogenic sound can equal noise pollution. The heart of this conflict is the struggle to find a balance between human activities and protection of marine mammals.

(a) High level of scientific uncertainty

Science shows that marine mammals produce and use sound to communicate as well as to orient, locate and capture prey, and to detect and avoid predators (Payne and Webb, 1971; Richardson et al., 1995; Southall et al., 2007). When anthropogenic noise occurs within marine mammal hearing ranges and is at a high enough intensity, research has shown that exposures can in some instances lead to adverse physical and psychological effects on marine mammals. Possible effects can include: (1) permanent or temporary hearing loss, discomfort, and injury, (2) masking of important sound signals, (3) behavioral responses such as fright, avoidance, and changes in physical or vocal behavior, and (4) indirectly altering prey availability (Nowacek et al., 2007; Southall et al., 2007; Clark et al., 2009; Lucke et al., 2009; Di Lorio and Clark, 2010).

Decades of research have largely answered some important questions, such as likely situations where sound may cause hearing damage or direct mortality and measures that may avoid these situations. However, many key questions still remain unanswered. Further, scientific results may also answer one question but raise many more in the process. For example, there is still scientific uncertainty regarding the nature and magnitude of behavioral impacts and whether these impacts may go beyond the

individual animal and result in population level effects. There are also unknowns about the how cumulative noise sources (e.g., shipping plus seismic) affect animals.

(b) Political and regulatory complexity

Many countries have laws in place for the protection of marine mammals. These same countries also have laws that promote resource development and related ocean uses (e.g., offshore energy development, mining, commercial shipping, fisheries, military preparedness exercises). It is unclear how these various statutes relate to each other and whether the goals of one statute trump the goals of another.

These regulatory challenges are further compounded by political realities. For the most part, the industries being regulated on this issue are perceived as considerably large and influential (i.e., they use effective lobbying). They understandably want a reasonable decision in a timely manner and will exert their political influences when needed. Politicians also need to weigh the advancement of certain national issues (e.g. increased domestic energy production or military readiness) within the context of their own political reality. Environmental organizations launch campaigns to capture the public's interest on an issue that is otherwise largely unknown. They may even litigate particular decisions or activities, and this threat of litigation can also influence a decision. Ultimately, this mix of regulatory uncertainty, lobbying, litigation, and political and media campaigns bind government agency staff time, result in agency indecision (or unsustainable decisions) and add to the depth of the conflict among parties.

(c) Diversified stakeholder interests and needs

The diversity of stakeholder groups and the highly technical nature of this issue make for very complex relationships between parties. Stakeholders have diverse backgrounds, philosophies and expertise. They include many governing bodies, industry groups, academic and research institutions, militaries, contractors and environmental organizations. Examples of key stakeholder groups related to this issue are provided below (listed alphabetically) as well as a high level view of the *perceived* motivating factor of each group with further information on data results presented in Chapters 2-4. Although this list is U.S.-centric, many of these group types are also mirrored in other countries. In addition, there are other group types not listed here, such as tribal and state governments, other industries (e.g., commercial fishing, offshore construction) and contractors.

- **Academic (Impact)**: This group includes scientists, affiliated with universities and research organizations, who study the impact of sound on marine mammals. All generally seek to reduce scientific uncertainty as a means to better inform decision-making.
- **Academic (Geo)**: These academics work for research institutions and government agencies (e.g., National Science Foundation and U.S. Geological Survey) who conduct research focused on understanding physical processes of the environment (e.g., sea level rise, earthquake risk). To conduct this research, sound is introduced into the environment (e.g., seismic surveys to detect earthquake potential). Given Academic (Geos) are sound producers, they are

separated out from Academic (Impacts) for the purposes of this study. The sounds produced from this group that garner the most interest include airguns during seismic surveys and other geophysical sound sources used to map ocean bathymetry.

- **Government (Federal)**: In the U.S., approximately ten federal agencies are engaged on this issue. Agencies are charged with instituting their statutory mandate. Often, these mandates can dramatically differ between agencies and even be directly opposed to each other. For example, one agency may be charged with protecting marine mammals while another is mandated with developing ocean resources (albeit in an environmentally responsible manner). There is no overarching guidance on which mandate takes priority when conflict occurs.
- **Environmental non-governmental organizations (eNGOs)**: A number of eNGOs are now engaged on marine sound issues, at both the local and national levels. Some appear either outright opposed to certain human activities (e.g., oil and gas development or military sonar) while others appear to seek a better balance between these activities and environmental protection. All aim to represent their membership (largely comprised of members of the public) in working to protect marine mammals from unnecessary harm.
- **Navy (U.S.)**: In the U.S., the Navy conducts activities that are meant to prepare and defend the nation. Some types of naval sonar have been shown to result in injury and mortality to certain marine mammal species in very specific situations.

In response, the Navy developed a robust research program to better inform decisions and also implemented mitigations to reduce potentially harmful impacts.

- **Oil and Gas**: This group includes managers, scientists and engineers working within this industry who focus on providing services and economic gain but not unequivocally at the expense of the environment. Industry will adjust (i.e., mitigate) their activities to better protect the environment but want these adjustments to be reasonable and effective. They seek predictability in decisions and requirements in order to coincide with business planning.

Figure 1.2 Sperm whale beginning dive near oil production platform in the Gulf of Mexico (photo credit: Christoph Richter for the Bureau of Ocean Energy Management)

Some members of this group work for Exploration and Production companies (E&P) that includes a specific sector of the oil and gas industry focused on developing and producing offshore hydrocarbon resources. Others work for Geophysical Contracting companies (Geo Cos) who collect geophysical data to locate hydrocarbons or characterize the surface and subsurface of leased areas for E&P companies. Although each group has a distinctive purpose, they are closely connected by the intersection of their missions and reliance on each other for financial and data support.

There are a variety of sounds produced during the exploration, development and production of offshore oil and gas. The sound garnering the

most attention has been airguns used during seismic surveying. Others sounds of interest include drilling, vessel and other geophysical source noises.

- **Shipping**: This group includes commercial entities that own, operate, charter or have an interest in ocean-going tank, container, or dry bulk vessels that transport goods across the oceans. The main source of sound from this industry is through propeller noise. Like oil and gas, commercial shipping is focused on providing services and economic gain, but not unequivocally at the expense of the environment. They seek reasonable, effective and predictable decisions to coincide with business planning.

Section 1.04 Existing levels of conflict

Madden and McQuinn (2014) describes three levels of conflict that are useful in analyzing the conflict surrounding an issue. These include dispute, underlying and identity. Because of this issue's history and the relationships between major actors, most of the conflict today lies at the identity level. Many interested parties are now largely entrenched in their positions and their interpretations of or assumptions about the positions of others. Further, the processes meant to find resolution over the years have been more suitable for dispute level conflicts. This has resulted in short-sighted decisions, often leaving parties unsatisfied. Instead, new approaches are needed that focus on building capacity among stakeholders so that the underlying and identity conflicts can be transformed into more effective action for all parties.

(a) Dispute Level

According to Madden and McQuinn (2014), dispute level conflict represents the more immediate or point-in-time disagreement. The conflict will be settled at the dispute level if parties feel satisfied with the process, relationships, and the decision made. If any element is unsatisfactory, then the scarring from one specific dispute turns into underlying conflict that resurfaces quickly when the next dispute arises.

One of the first major disputes about ocean noise and marine mammals involved the Acoustic Thermometry of Ocean Climate (ATOC) experiment. In 1994, a consortium of 11 research institutions in seven nations (comprised largely of Academic (Geos)), with funding from the U.S. Navy, proposed the ATOC experiment (see http://atoc.ucsd.edu). The study's goal was to assess climate change by using low-frequency noise to determine changes in water temperature over time. Some Academic (Impacts) were concerned about effects from this study on marine mammals and several eNGOs launched media and membership campaigns to raise public attention. In response, the Academic (Geos) proposed a marine mammal monitoring program (run by a third party neutral university). The project was ultimately approved and ran from 1996-2006. Final third-party monitoring results indicated no significant or long-term effect to marine mammals, although questions were raised about the ability to effectively monitor for effects. At the end, several parties remained largely unsatisfied with the outcomes of this process, and this laid the foundation for underlying conflict in future issues.

(b) Underlying Level

Underlying conflict represents a history of unresolved disputes that continue to influence present day interactions (Madden and McQuinn, 2014). Individuals are more likely to bring frustrations from past conflicts to the table regardless of the specific issue presently at hand. It becomes harder and harder to find common interests when the atmosphere is colored with past conflict.

The issue of marine sound and effects on marine mammals has been ongoing for at least two decades. Many of the key stakeholder groups on this issue, and even individuals within these groups, have been involved for years. Often, efforts to look for common ground have been put aside for established public positions given the longer history of unresolved disagreements. Among some key parties there is little trust and mostly disagreement. Because the commonly used public policy processes for this issue are not built to openly address conflict, and some even seek to avoid it, frustration levels and ultimately conflict continue to increase.

Examples of underlying conflict on this issue are abundant. Two key ones are noted below and each represents a culmination of past disputes. Again, these examples are meant to provide a high level view of the *perceived* conflict with further detail and research results provided in Chapters 2-4.

- **Use of naval sonar**: The U.S. Navy and several eNGOs have been in litigation for a decade on the Navy's use of active sonar systems for submarine detection (Zirbel et al., 2011). The fight has even resulted in a court case reaching the U.S. Supreme Court (NRDC v. Winter, 128 S. Ct. 2964 (2008)). The issue of how to

balance military preparedness and national security with protection of marine mammals from sound has been a central conflict in this issue.

The ATOC dispute, described in the previous section, in some ways was the start of the conflict between the U.S. Navy and certain eNGOs. (Other early sources of conflict involved the conduct of Navy ship shock trials.) ATOC was primarily an experiment by oceanographic institutions (Academic (Geos)), but the Navy provided some funding and other resources. The ATOC experience left both parties with unresolved conflict, such as the Navy feeling eNGOs did not understand science and were unnecessarily inflaming the issue and eNGOs feeling the Navy and others should have been more forthcoming about the experiment and were denying the potential for impacts. This unresolved conflict was then carried over into disputes to come, first in the mid-1990s over the Navy's use of low frequency active sonar systems (LFA) and later over its use of mid frequency active sonar systems (MFA).

Initially, the conflict over the Navy's use of LFA was addressed through concerted efforts to dialogue, identify issues, and attempts to address concerns. The involved parties held past frustrations but were still willing to work together (and believed resolution was possible). However, struggles continually arose that ultimately led to the end of dialogue and extensive litigation. For example, the Navy was unable to be completely transparent on operation of the LFA system due to national security concerns that was likely seen as lack of transparency by the eNGOs. Further, the Navy was out of compliance with several environmental

regulatory requirements over the use of LFA. The Navy, in turn, grew frustrated with a perceived lack of understanding by the eNGOs, both on the technology as well as potential biological effects to marine mammals. In addition, the Navy grew more distrustful as the involved eNGOs published public information about LFA and its impacts that the Navy viewed as inaccurate and inflammatory. This led to Navy to feeling as if they were being unfairly villainized. The failure of resolution with LFA sonar strengthened the underlying conflict and ultimately set the stage for the debate to come over the Navy's use of its MFA sonar—a debate mired in identity conflict.

- **Use of airguns for academic research**: In 2012, the Pacific Gas and Electric (PG&E) requested approval from both federal and state regulators to conduct seismic surveying using airguns to assess earthquake risk at the Diablo Canyon nuclear reactor in San Luis, California. The project was initiated to check safety concerns given the Fukushima Daiichi nuclear disaster following the 2011 earthquake and resulting tsunami in Japan. The project was a partnership with the U.S. National Science Foundation (NSF), who was to lead the surveys, given its mission of oceanographic and offshore earthquake probability research and its vessel and seismic surveying capabilities.

  At the surface, public safety issues would seem to outweigh environmental concerns. However, existing underlying conflict was at play. The involved eNGOs came to the project with years of frustration over what they perceived to be an unsatisfactory resolution by both Academic (Geos) and Oil and Gas in

addressing potential impacts of airguns on marine mammals. Several eNGOs launched media and membership campaigns against the proposed survey, stating the surveys were not worth the risk to marine mammals. Through this outreach, fishers entered the debate with concerns about noise reducing fish catches. Further, the public view was already inflamed over negative perceptions of the management of the Diablo Canyon facility and general anti-nuclear power sentiments.

In reaction, PG&E and NSF reduced the survey size and increased protective measures to accommodate each concern as it was raised to the best of their ability. They became increasingly frustrated with eNGO public campaigns and felt that eNGOs were purposefully spreading misinformation to raise more opposition to the project and also increase fundraising. They also became even more aggravated over a perceived inefficient handling of the project by the federal regulators, a feeling that existed between NSF and regulators prior to this project.

Ultimately, the PG&E permit application was denied by the state regulator (California Coastal Commission) which prevented any federal approval of the project (see http://documents.coastal.ca.gov/reports/2012/11/W13b-11-2012.pdf). The underlying conflict from several points prevented resolution on this project. Tactics used by all sides further inflamed the issue. All parties left with a greater level of distrust and more embedded perceptions about each other that may further complicate the ability of all parties to work toward an acceptable solution on future projects.

(c) Identity Level

With identity conflict, stakeholders become more segmented into group positions with each group developing separate approaches to improve the situation from their point of view. Parties make assumptions and hold prejudices about others based on their group affiliation. Trust is often at an all time low. This in turn makes resolving conflict even more challenging given the assuming person has little to no hope that an individual from another group will act or think differently than expected. These prejudices lead to avoidance of working together which, in turn, inhibits dialogue, understanding and the potential for collaborating toward a common vision of improving outcomes for all (Lederach, 2003; Kriesberg, 2011; Madden and McQuinn, 2014). The issue only becomes more wicked.

In the case of marine sound, underlying conflict has festered over the years and, in some cases, has deepened into identity level conflict. Many, but not all, of the interested parties view this as 'us' vs. 'them.' While certain individuals can see past this and are able to 'separate the people from the problem,' many still possess long-held assumptions and prejudices about how individuals will behave according to their group affiliation.

Perhaps one of the best examples in marine sound of identity level conflict is between the involved eNGOs and the U.S. Navy. From the eNGO perspective, their mission is to promote sustainability and protect environmental resources. They are the voice for the public and the watchdog on government activities. Achieving their mission is challenging when they are faced with perceived power inequalities with the Navy which eNGOs feels has much greater numbers and resources. It is further challenging

given the Navy is a large organization, and there is no one person, or even small group of people, to work with to affect change.

In order to attempt to balance the power, eNGOs have undertaken several tactics. One, they built an alliance with one organization identified as the lead in order to share resources and coordinate efforts. Two, eNGOs have used litigation on many occasions where they felt dialogue was ineffective (or even went straight to litigation without any dialogue). Third, the eNGOs have also conducted media and public campaigns to raise awareness of the issue and also fund their efforts. Often (but not always) in these campaigns, eNGOs have dramatized the issue using emotive words and pictures and highlight worst-case scenarios in order to gain media and public attention that they feel can only be garnered with such methods.

On the other hand, the Navy's mission is to protect national security and conduct military preparedness exercises. In order to do so, the Navy needs to be able to continue training and preparation for war-time operations which requires a level of predictability and certainty for planning purposes. Some tactics used by eNGOs directly oppose this, such as litigation or media and public campaigns that bring attention to projects and drive public will to oppose them. This can lead to last minute stoppage of exercises and ultimately a feeling of a lack of predictability and empowerment.

The Navy has undertaken several tactics to address this power struggle, including reducing transparency (protecting information) and even seeking a national defense exemption from Congress under the U.S. Marine Mammal Protection Act for MFA sonar exercises. The Navy has also employed a tactic of increasing scientific understanding

and detection of impacts through the development of a robust research and monitoring program and ensuring compliance with relevant environmental statues. These efforts have come at considerable time and expense.

Ultimately, the tactics of each side in their attempts to gain or equalize power work to further entrench the conflict and become the identity of each group to the other. The eNGOs use of exaggerated and/or inflammatory language in their public and media campaigns is often seen by the Navy as dishonest and unprofessional, especially given the Navy's internal culture that promotes cordiality, respectful conversation and the sharing of accurate information. Over time, the eNGOs use of litigation has gained them substantial power, especially in terms of garnering the attention of federal regulators and eventually slowing regulatory decision-making (and hence approval of some naval operations). In turn, the Navy now believes eNGOs use litigation as only a means to stop or slow activity and ultimately be anti-military. As a result, the Navy has become much more careful about information it shares and limits any dialogue with eNGOs due to beliefs that eNGOs will use this information against them in the court of law and/or public opinion. The eNGOs then feel even more excluded and lacking access to information, and the cycle continues.

The development of this conflict over time to the identity level has also resulted in challenges for an individual from either side to reach across the divide. For example, the eNGO alliance (built to gain power and to protect against threats to their environmental identity) can inadvertently limit the diversity of perspectives and options for a path forward. The assignment of a lead eNGO organization means the interaction is mainly

limited to that organization, especially for a technical issue like marine sound where maintaining an understanding of the issue requires regular involvement. To keep the eNGO alliance strong and hold the line with the Navy, each eNGO must keep the same general public position and tactics as the lead organization even if they individually may be open to more options and different approaches. The lead organization can also potentially become trapped in this alliance as it may become hard for them to explain a change in tactic (e.g., moving to a position of compromise) to other organizations that could see this change as a threat to the environmental identity.

Reaching across the divide is now also difficult for individuals within the Navy where compromise and sharing of information works against their own group identity (e.g., working with an eNGO may be frowned upon by the larger Navy group identity). Further, participant turnover is high given management positions within the Navy are term-limited and people rotate through every two to three years. Whereas this turnover would seemingly lead to more diverse opinion, it can actually limit the time someone has to understand the issue enough during their term where they can move past the engrained perceptions and long-held stances to alternative solutions. While two to three years may seem sufficient, it is not so in a large organization like the Navy where many factions are engaged on the issue and none appear to hold dominion over the other.

Additional examples of key identity level conflicts between and within stakeholder groups include, but are not limited to:

- **Academic (Impacts)**: The identity of scientists is largely tied to his or her professional credibility. The need to maintain one's credibility, and thus reinforce one's identity, manifests itself in three ways. One, there may be reluctance for scientists to provide a 'good enough' answer or a solution too early in the problem. If they are wrong, then their credibility could be affected. Two, credibility can be lost to some if a scientist collaborates with and/or accepts money from sound producers given their science may be seen as tainted by some (even some members of their own group). Three, credibility can also be impacted if a scientist engages in the public policy process. There is still an element of the academic world that promotes scientific purity and identifies with the separation of science and policy. In these cases, an individual scientist who crosses over and advocates a certain policy approach may lose credibility. Scientists, therefore, may end up less likely to engage in the public policy process. This can drive a wedge between the application of science to policy and weakens the ability of all stakeholders to be aware of and understand the best available science in its decision-making.
- **eNGOs and Oil/Gas Industry**: eNGOs see the oil and gas industry as largely interested in the financial bottom line and having inadequate regard for the environment. They often consider science generated by industry as partial, invalid and one-sided, even if the project is led by a reputable and independent scientist. (This in turn makes some academics reluctant to work with industry on

projects.) Often, eNGOs feel overwhelmed by the financial and personnel resources of companies. For example, eNGOs cannot match resources needed to attend meetings. Even if they can attend, eNGOs cannot do it in numbers sufficient to match industry representatives. eNGOs may also feel overpowered by industry and their lobbyists regarding access to government agencies. In response, eNGOs have turned to public/media campaigns and litigation as a means to gain more power and force the implementation of protective measures they feel are supported by science and law.

On the other hand, oil and gas companies feel conflicts with eNGOs through litigation and public/media campaigns have resulted in the need to operate in an unpredictable environment – a highly undesirable state for any business. Companies point to numerous instances where proposed activities were significantly delayed or canceled due to eNGO pressure. At times, costly mitigations were imposed without a clear understanding of their need or effectiveness. Companies feel overpowered by the eNGOs use of media and public campaigns and litigation as well as the influence of these efforts on government regulators. They often feel that, based on past actions, eNGOs will never be satisfied and will litigate no matter what a company may do to negotiate for a balanced approach. This, in turn, makes it difficult for individuals within a company to advocate further compromise with eNGOs to their management (or even to other members of their group). In the business world, weakened senior level support makes any type of progress challenging and even unachievable.

- **Federal Government and Others**: Many stakeholders involved in this issue generally believe the government at large is overly bureaucratic, uninformed and ineffective. Stakeholders are frustrated with the government's management of this issue, or at least the decision processes in place. Many see management practices as not being informed by the best science. Regulations are outdated and decisions processes are insufficient. Some believe that government staff do not understand the science and/or are frustrated when they do not see decisions reflect their own point on view of the best available science. Almost all feel that current laws inadequately address ocean sound issues and wonder why better laws or regulations are not developed. While stakeholders acknowledge that many of the individuals within government agencies engaged on this issue are truly trying, years of perceived inadequacies over time have led to a prejudicial assumption that the government is incompetent or incapable of handling this issue.

  Government, on the other hand, feels everyone is a critic. Depending on the stakeholder perspective, mitigation and monitoring requirements are either too restrictive or not restrictive enough. Decisions occur too soon or too late. Agencies are constrained by established decision-making processes, legal requirements and even political realities. The high level of litigation on this issue by certain eNGOs has caused agencies to spend significant time and resources developing encyclopedic environmental analyses to protect themselves from more litigation. Agencies seek meaningful input from outside parties but more often feel they receive only myopic positions or even parties' criticizing decisions

without providing input earlier in the public decision-making process. With these myopic views, the government feels other stakeholders do not understand, or are not open to understanding, the implications of their decisions on the larger management needs as well as other stakeholders. Over time, this has led to government viewing many stakeholders as uninterested in seeking an achievable outcome (or good enough approach) and centered instead on their own needs.

Section 1.05 How government decision processes increase conflict

In the U.S., and likely many other areas in the world, the federal government has largely served as the nexus for all stakeholder groups on this issue. The government is where the overarching policy and individual permitting decisions are made. However, for a variety of reasons (mainly lack of staff and financial resources), the U.S. federal government has not yet built a decision-making process that can make this issue tamer. Listed below are the five primary reasons why the current government decision processes cannot successfully address this case study (or many other seemingly intractable issue).

(a) Decision process primarily uses a linear approach

The typical government decision process is linear, sometimes called the waterfall approach (e.g., gather data -- analyze data -- formulate solution -- implement solution) (Conklin, 2010). A linear process oversimplifies a complex issue. It is often myopic and fragments the larger issue into many smaller pieces. There is then no overarching vision looking holistically at the issue.

Complexity requires a greater need for study and analysis (NRC, 1996). Instead, WEPs require a decision-making process that is iterative, deliberative, adaptive and collaborative (Balint et al., 2011). Only with such an alternative process can one overarching vision be created, implemented, revisited and adjusted over time.

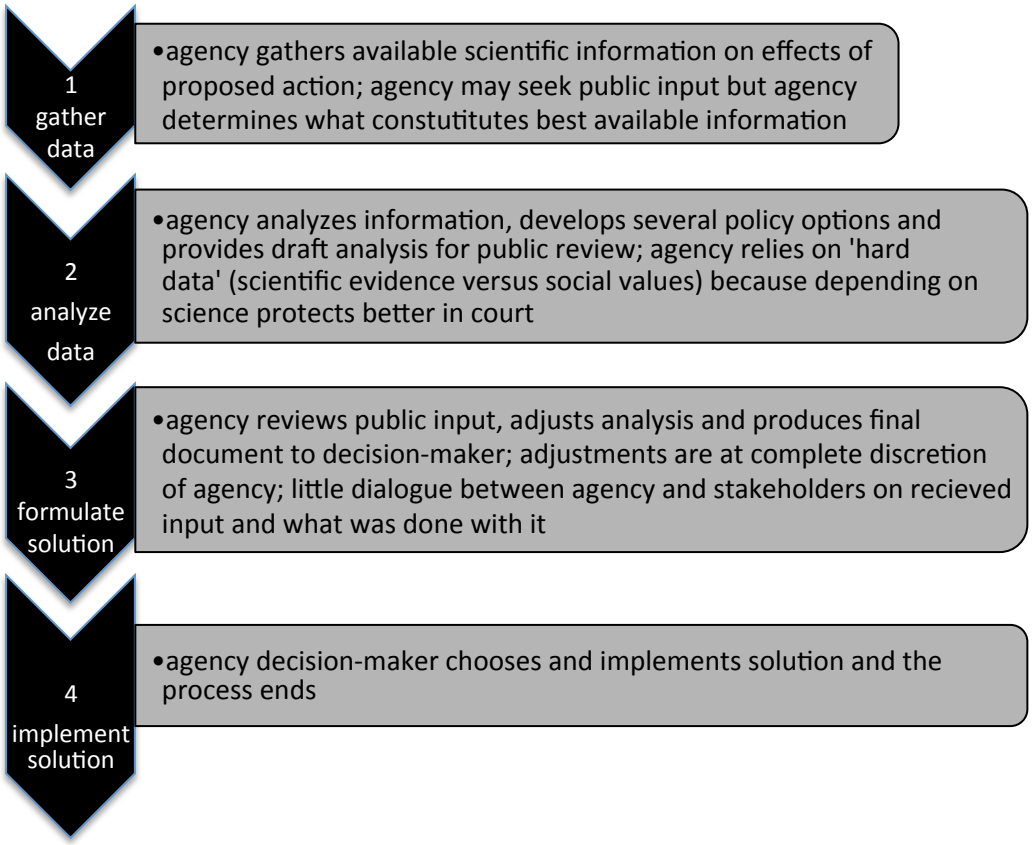


Figure 1.3 Linear steps of the National Environmental Policy Act process
The intent of the National Environmental Policy Act (42 U.S.C. Section 4321 et seq.) is to seek a balance between environmental, social and economic concerns on proposed actions, gather public input and promote transparency in decision---making. The reality, however, is that NEPA moves through a relatively linear process without leaving the ability, or willingness, to revisit a previous step (unless forced to do so by litigation or threat of litigation). There is little room for meaningful deliberation and iterative interactions among stakeholders. Little surprise then that NEPA documents on controversial actions tend to end up challenged in court.

(b) Timing rather than quality becomes the essence of the decision

Agencies push forward to meet deadlines required by regulation or even political pressures. This time crunch forces government to focus on the immediate need and not the longer-term strategy. Agency personnel are pressured to analyze available information in the allotted time, thus limiting time for more creative decision alternatives. This time crunch also pressures stakeholders to hurry up to influence a decision. Instead of space for a back and forth dialogue, they must instead establish and hold strong 'positions.' Positions then create a competitive, adversarial and distrustful environment with 'opposing' parties and do little to help solve an intractable issue. Once people commit to positions, it can become part of their identity and therefore vital to defend (Fisher et al., 1991; Lederach, 2003; Madden and McQuinn, 2014). Ironically, this pressure to move forward under time constraints often results in longer time frames for decisions as agencies become knotted up with political and stakeholder pressures (e.g., responding to mass email campaigns, briefing senior managers in preparation for meetings with stakeholders) and, in some cases, have to redo costly analyses due to litigation.

(c) Process emphasizes science without addressing human social dynamics

Many stakeholders feel that 'ecological' science will provide the answer on intractable environmental issues, especially highly technical ones like marine mammals and sound. Where multi-stakeholder workshops have occurred on this issue, they have largely focused on identifying scientific information needs, perhaps as this appears to be the most likely area of compromise among stakeholders. Government staff also generally

have science backgrounds. The legal framework requires the use of the best available information, largely interpreted to be scientific in nature. Agencies have lost litigation when not using the best available information. This ultimately leads agencies (and other stakeholders) to find more comfort in the science as a means to a solution (or for the agencies lessening the potential for successful litigation). Agencies often convene and rely on scientific experts to provide key input.

There is no doubt that science will help inform and answer key questions and that increasing the understanding of the science behind an issue is a central component. However, the science cannot be pursued solely as the means for resolution. While the science is important, and should be pursued, this expert *driven* approach comes at a cost. It largely ignores the issues of social values, equity, and justice that made the problem wicked or intractable to begin with. Rather, the process needs to recognize that political and social influences will overshadow any technical analyses on controversial issues (Renn et al., 1995). Agencies must instead develop new ways to use science *and* issues of social values and equity to inform decisions (Ludwig et al., 2001; Reed, 2008).

(d) Parties are not truly part of the decision-making process

Environmental statutes require transparency but do not go as far as requiring (or in some cases even allowing) stakeholders a seat at the table when making decisions. Where public input is allowed, the interaction is largely limited to written comments, timed oral comments at public meetings, and, in fewer cases, meetings between federal managers and stakeholders. Generally, the information flow is one-way from the stakeholders to the government and agencies ultimately determine which comments they

incorporate into their decisions. There is little opportunity for genuine, creative shared-decision making in the face of more reactive and arms-length notice and comment periods.

Participation in a well-designed decision process actually empowers parties to better understand all sides of the issue, have a greater opportunity to explain their viewpoints and listen to those of others, and consider the available information. Such involvement can promote trust that moves participants toward coordination and cooperation for mutual benefit—in both the short- and long-term. This creates network power, where all participants share in the flow of power. With these networks come diversity, independence, and authentic dialogue. This can then lead parties to open their minds to develop creative, workable solutions, compromise, and even accept decisions not fully aligned with their viewpoints as long as their fundamental needs are met (Burton, 1986; Fisher et al., 1991; Huer et al., 2007; Reed, 2008; Madden and McQuinn 2014). It can also result in a network that is more capable of learning, adapting to change, and sustainable with the long-term vision generally needed to address wicked or intractable issues (Booher and Innes, 2002; Zhang and Dawes, 2006; Blackstock et al., 2007).

Importantly, participation of stakeholders in a decision-making process does not mean decisions need to be done by consensus or that the government has to relinquish control of a decision. Rather, for complex issues, processes can be designed within the parameters of regulatory requirements (including timing) that fully integrate parties as participants in the decision process. Along with this participation is an expectation that

the final decision is at the discretion of the government, but that the government will be open and transparent with all parties as to the reasoning behind its decision.

(e) Process fails to transform conflict into effective action

Decision-making processes cannot produce effective solutions in situations where conflicting goals, identities and values predominate (Weber, 1985; Moote and McClaran, 1997; Conley and Moote, 2003; Madden and McQuinn, 2014). Addressing the conflict is, therefore, the most important action that can be taken and is necessary for the success of workable and sustainable solutions on intractable issues. It is also the most difficult to implement.

During 2004-2005, the U.S. Marine Mammal Commission (MMC) convened a Federal Advisory Committee (FAC) on Acoustic Impacts on Marine Mammals (MMC, 2006). The FAC consisted of 28 nominated representatives and met six times over a two-year period. The goals were to seek consensus on (1) available scientific information; (2) areas of general scientific agreement and uncertainty; (3) research needs and priorities; and (4) management actions to avoid and mitigate possible adverse effects (MMC, 2006).

The end result of the FAC was a breakdown of stakeholders into various caucuses, each providing their own report, and very little to no overarching consensus. What was meant to bring people together was largely seen as a failure. But why did it fail? The following reasons were identified by interviewees who were also engaged in the FAC:

- Striving for consensus set the bar too high for an issue with significant conflict.
- Facilitators were viewed by some as ineffective and needed more technical understanding of the issue to drive the discussion appropriately.
- Leadership was viewed by some as ineffective and unfair.
- FAC procedural requirements constrained flexibility and adaptability.
- Goals were mainly science-driven and used science as a means to resolution (e.g., what can the parties agree to in terms of scientific knowledge and needs).
- Some participant personalities were not amenable to cooperation and used tactics that increased conflict (e.g., blame, arguing, taking actions without transparency).
- Participants remained stuck on positions. Capacity was not built for the group to work together. Disagreements overshadowed agreements.

Facilitators interviewed 80 individuals prior to the start of the FAC (IECR, 2003). Questions mainly focused on science issues, reducing management controversy (but mainly through quality risk assessments and appropriate application of mitigation), and factors for a successful collaborative process (described as product-focused, willingness to participate, and available scientific expertise). Within the facilitators' report were more illuminating or 'indicator' statements, such as: deciding what battles needed to be fought and not creating unnecessary ones, improving relations among parties to make progress on the topic, balancing environmental concerns with economic and other concerns, promoting protective policies and desiring a way forward to end crises driven, costly battles. As one interviewee stated, "*it would be very easy, and not desirable, to get engrossed in the numerous scientific questions related to this topic and never get to the policy and management decisions that are the essence of the dissonance that we are currently experiencing*" (IECR, 2003). These statements indicated a need for a different type of process to transform the group into collective action. See Appendix D for group recommendations from 2004-2005 FAC.

Figure 1.4 Failure of the 2004-2005 U.S. Federal Advisory Committee on Acoustic Impacts on Marine Mammals

Section 1.06 Taming a wicked issue

> *"Try never to ignore or talk away someone's perception. Instead, try to understand where it is rooted."* (Lederach, 2003: page 58)

So, how does the government break the cycle and make an issue like anthropogenic noise and marine mammals less wicked or intractable? By turning away from traditional linear approaches and towards alternative approaches built on understanding the differing human values and identities that made the issue wicked to begin with, and transforming this conflict into more effective action (Lederach, 2003; Balint et al., 2011; Madden and McQuinn, 2014).

The difference in any alternate approach for an intractable issue is that resolution is not aimed at one point in time but rather at building (transforming) the capacity of involved stakeholder groups to work together in the longer-term. Transformative processes focus more on the relationship among participants and seek to build change processes that address the immediate situation (short-term responsive) but also the broader setting creating the conflict (long-term strategic) (Lederach, 2003; Madden and McQuinn, 2014).

Conflict changes relationships in predictable ways, altering communication patterns and social organization, and altering images of the self and of the other (Rupesinghe, 1994; Kriesberg, 1998; Lederach, 2003; Botes, 2003). A transformative process openly addresses perceptions of issues, actions, problem definition, and identity (of self and others) so that each group gains a more accurate understanding of the others (also called recognition by Bush and Folger (2004)). Understanding helps stakeholders

to develop the capacity to see (look beyond the presenting problem) and empathy to understand the situation of another (Lederach, 2003). This transforms personal relationships that can then facilitate the transformation of the group social system (Dukes, 1999). Once this understanding is achieved, methods can be used to change the way the conflict is expressed and move the dialogue from competition, or even aggression, to conciliation and cooperation. Participants are empowered to define their issues and seek their own solutions and can approach current and future problems with stronger, more open views (called empowerment by Bush and Folger (2004)). The conflict itself therefore becomes less destructive and less of a hindrance to making progress on potential paths forward (Schrock-Shenk and Ressler, 1999; Green, 2002). Through a transformative process, the group can then deal more effectively with future issues (Dukes, 1993).

(a) Developing an alternative, transformative approach

To set a strong foundation for an alternative, transformative approach, parties must undertake a rigorous analysis of the existing social conflict that goes far beyond the current situation assessment approach. Studies should be designed to uncover stakeholder values, interests, needs, identities, established positions (and how they have changed over time), differences in problem definition, perceptions of self and other stakeholders, and trust in the process (or how to build it if trust does not exist). This should entail robust qualitative research approaches (i.e., stakeholder interviews, observations of group interactions, document reviews) that shed light on the context and reasoning behind the conflict rather than just preferences for policy choices, positions on

issues, and what scientific studies people feel are needed. Further, the analysis must include interviews (rather than only written quantitative surveys) given that interviews are where the context and reasoning behind an individual's public stance can be revealed. Interviews afford people a full opportunity to explicitly and thoroughly state their perspectives in a one-on-one, private situation. Interviews can also provide anonymity and a level of comfort to share their individual (not stakeholder group-driven) perspectives and self-thinking (Berg, 2009; Angrosino, 2010). This is especially critical for intractable issues where individual stakeholders are often welded to a publicly stated position, not the interests behind how they came to this position.

Parties should then use these data to design and implement an iterative, deliberative, collaborative and adaptive process built on transforming the conflict and growing group capacity to address issues in the long-term. The design of an alternative approach should be done in concert with a conflict transformation expert(s), especially given that transformative processes are new to the most parties (although used often in the peace conflict resolution field). It should also be done in collaboration with involved stakeholders and geared to the specific issue. There is no one size fits all for designing processes to address wicked problems.

Any transformative process will encourage stakeholders to be open and honest about the conflict. This is certainly new ground for many, especially the government, where conflict is held at arms length and the expression of emotions is generally perceived negatively. So often agencies convene groups of interested parties and, rather than address the conflict, forge ahead into where potential solutions (decisions) may lie.

This is especially true on technical or scientific issues, such as marine mammals and sound, where stakeholders tend to have technical backgrounds and may be reluctant to move outside of factual discussions.

Stakeholders may believe that emotions make them weaker, interfere with good judgment and reasoning, and complicate planning. Modern neuroscience, however, proves that emotions actually make us more effective, are essential to good judgment, speed up reasoning, build trust and connection, and provide vital feedback. There is conclusive biological evidence that decision-making is neurologically impossible without being informed by emotions (Sanfey, 2007). Emotions are, in fact, highly intelligent and critical for building group intelligence and social capital (Kramer, 2007). Further, people need to be heard and allowed to express emotion before they can open their minds and consider compromise (Innes and Booher, 1999; Bush and Folger, 2004). They also need to understand the larger picture of the issue, including regulatory and political constraints, as well as how their positions affect other stakeholders. By allowing individuals to 'emote,' the conflict can be better understood by all participants and each can gain a greater understanding of the reasoning, beliefs, and potential areas of compromise (shared interests) with fellow stakeholders. It is then, and only then, that steps can be taken to transform the group and its conflict toward effective action, decisions, and outcomes.

Section 1.07 Is it worth the time and cost?

An alternative approach will no doubt cost time and money but so do failed linear processes, government indecisions (or poor decisions) and litigation (Ewel, 2001; Smith and McDonough, 2001; Irvin and Stansbury, 2004; IECR, 2005; Agranoff, 2006). The costs of alternative processes should be considered as long-term investments where benefits will ultimately outweigh costs. Benefits include social learning, gains in social capital, empowering groups to work together in the long-term, and the probability of more effective and sustainable decisions (Rock and Cox, 2012). The costs of more traditional, linear processes generally include redoing lengthy and costly environmental analyses, missed opportunities for public and private investments from untimely decisions, deepening antagonism and hostility among stakeholders, and costly impacts to natural resources as protective actions are stymied by an inability to act on decisions.

There are also substantial costs from litigation. For example, a 2011 Government Accountability Office report found that the Department of Justice annually defends about 155 lawsuits against the U.S. Environmental Protection Agency (fiscal years 1995 to 2010). The costs to defend these cases averaged $3.3 million annual for a total of $43 million (fiscal year 1998 to 2010). In addition, costs to settle cases (i.e., to avoid going to court) cost the government an additional $3.2 million annually (fiscal years 2006-2010) (GAO, 2011). (All amounts are given in constant 2010 dollars.)

There may also be a wariness of how such a process can fit into a regulatory environment where timely decisions are needed or where the government is mandated by law to make the decision. However, an alternative process can be designed within the

directives and frameworks of the specific statutory requirements. Larger decisions can be broken down into phases with agreed upon time frames. Participants can design a process that addresses short-term needs but also builds a longer-term vision. This collective effort, in turn, builds the capacity of the group to collaborate and develop more effective strategies for dealing with future problems and continuing cycles of conflict. In fact, such a process can actually *buy* time to reach a more effective overall decision since parties are now part of working toward a solution, are more willing to accept short-term decisions if engaged in long-term solutions, and are much less likely to litigate in the interim (Gangl, 2003; Heuer et al., 2007; Reed et al., 2008; Weber et al., 2008).

Section 1.08 Conclusions

> *"The courts of this country should not be the places where resolution of disputes begin. They should be the places where the disputes end after alternative methods of resolving disputes have been considered and tried*." – Justice Sandra Day O'Connor, former U.S. Supreme Court Justice (per University of Pennsylvania *Almanac*, 2010)

Ultimately, the wickedness of an issue is not about the science, nor will the science ever tame the issue on its own. Rather, the issue is intractable because of the conflict *between* people about the most appropriate path forward. It is then imperative to understand, address, and transform this conflict in order to move off the decision carousel (i.e., patterns of continuous and circular debates) and toward improved outcomes and sustainable decisions.

With the understanding of the role conflict plays in making an issue intractable will come the need to design new decision processes. This will require a paradigm shift

for many, especially the government, that moves away from shorter-term horizon, science-driven, linear processes to longer-term horizon, holistic, iterative and adaptive approaches. Such a change will also require stakeholders to step out of their 'technical' comfort zones, address the conflict openly in a productive manner and collaboratively develop the capacity to deal with both immediate and long-term aspects of the issue.

It may seem too ambitious, costly or unrealistic to pursue such a change. Costs may seem too high and time too short. Stakeholders may be wary about openly addressing conflict or believe that certain groups are just unwilling to improve outcomes. However, most everyone will likely agree that the current approaches are not working, indecision or poor decisions occur, and the same set of issues is revisited again and again without significant progress.

As Albert Einstein once stated, "*We cannot solve the problems we have created with the same thinking that created them."* It is time to reset and test the role that transformative processes can play in truly taming wicked environmental problems.

Chapter 2
Group Identity and Intra-Group Conflict

The issue of marine sound has been shown to be a truly Wicked Environmental Problem (WEP) characterized by high levels of scientific uncertainty on risks, intermingling political/regulatory complexities, regularly evolving ecological and social environments, and diverse stakeholder values and viewpoints. Because of the history and the relationships between major actors, much of the conflict surrounding marine sound now lies at the identity or group level (Lewandowski*, in press*). Chapter 1 described the foundations of what makes this issue wicked, provided an overview of the identity level conflict plaguing this issue and the elements of an alternative problem-solving approach based on conflict transformation practices. This chapter will now take a more detailed look into the intra-group identify conflict (i.e., when members of a group conflict with one another) surrounding the marine sound issue, with an emphasis on how each group identifies themselves and elements of intra-group conflict that make resolution on marine sound more challenging. Results also elucidate how each group defines their interests and/or needs, perceptions of positive and negative tactics and ideas for improved outcomes.

METHODS

A case study methodology was undertaken to research aspects of the marine mammal and sound issue that are routed firmly in identity conflict. It used several data collection techniques, including a document review and analysis of 230 publications, semi-structured interviews with 54 stakeholders and participant review of selected analyses. By combining several techniques, data were triangulated so that the theories, questions and analyses were tested from multiple facets thus adding rigor to the results (Patton, 1990; Yin, 2003). Data were "openly coded" using categorizing strategies and memoing to capture connections (Glaser and Strauss, 1967). The Conflict Satisfaction Triangle was also applied to ascertain the role of relationship versus process and substance in the conflict surrounding the marine sound issue (Moore, 2003; Furlong, 2005). Further, informal interviews were conducted with collaborative action experts in order to gain a greater understanding of conflict transformation process. Appendix A provides more detail on the methodologies used.

Section 2.01 Group Identity

Identity is a fundamental human need that underlies many intractable conflicts and drives behavior in situations (Burton, 1986; Lederach, 2003; Stets and Biga, 2003). It is also a key issue in many intractable environmental problems (Madden and McQuinn, 2014).

Identity is essentially how an individual sees himself or herself in relation to the outside world (Burton, 1986). As part of meeting, promoting or strengthening one's

identity, individuals will align with groups that represent their own fundamental interests, values or needs. Group identity is then founded on a set of mutual understandings among its like-minded members regarding the unique characteristics (values, needs, actions) of the group and how these distinguish them from other groups. The linkage between the individual and the group is then continually strengthened as the individual participates in group activities (empowering group identity) that, in turn, reinforces the values and needs of self (empowering the individual) (Rowley and Moldoveanu, 2003). In other words, the needs of the individual and group align so that they constantly reinforce each other. If they do not, then individuals may leave or the group may disband.

Group identity *conflict* can occur in two ways. *Inter*-group conflict involves conflict between separate groups and is discussed further in Chapter 3 (Anderson, 2005). In these instances, members of a group align against outside threats to their identity, such as actions by others questioning the group's value or credibility or ability of the group to meet its interests and/or needs. *Intra*-group conflict, the focus on this chapter, occurs when members of a group conflict with one another or the expectations (i.e., rules of behavior) within the group limit an individual member's potential to resolve conflict. For example, a member of an oil and gas company and a member of an eNGO may be interested in sitting down together to dialogue on potential areas of agreement. However, these individuals' groups may make this difficult. The group may view such actions as a threat to its identity (e.g., environmentalists should not compromise with oil and gas companies or oil and gas representatives should not give in to unreasonable demands). Appearances of sitting down with the opponent may be taken as a sign of weakness or

moving off of a position so even beginning efforts at reconciliation can be extremely difficult. The group identity applies pressures that challenge resolution of the issue.

The following section reviews each of the seven stakeholder groups and describes key common themes about how the group identifies itself. It shows the group's top interests and/or needs, perceptions of tactics (both positive and negative), ideas for improved outcomes and areas where intra-group conflict can challenge the tractability of the marine sound issue. All ratings contained in the figures and discussion represent spontaneous responses from the group members (expressed in percentage of group members). (Table 2.2 on page 95 then summarizes the potential areas of intra-group conflict.)

- Interests and/or Needs: The "why" behind a stated position. They reflect not only what is important as an outcome but also the reasons why they are important. Some interests are fundamental "must haves" and cannot be compromised (called needs). It is essential to determine which interests are fundamental and which may be negotiable (Fisher et al., 1991; Dukes, 1993; Provis, 1996).
- Tactics: How group perceives tactics, either positively or negatively. A tactic is an action or method that is planned and used to achieve a particular goal. Negatively perceived tactics are often reciprocated and patterns of competitive tactics escalate conflict. Positively received tactics preserve relationships and are likely to lead to productive conflict management (Hocker and Wilmot, 1985).
- Improved Outcomes: Key actions group feels will lead to improvements, divided into process, relationship and substance (per the Conflict Satisfaction Triangle).

RESULTS and DISCUSSION

Section 2.02 Academic (Impact)

"*Academics serve as a check and balance to the government.*"

"*Where I'm interested, and probably where I can make the most contribution, is in the substance part*."

Seven of the 54 individuals interviewed were classified into the Academic (Impact) stakeholder grouping. Within the context of this research, Academic (Impact) members were individual scientists associated with universities or organizations conducting research to assess impacts of marine sound on marine mammals.

Figure 2.1 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance as well as how they perceive various tactics used over time on this issue (either positively or negatively).

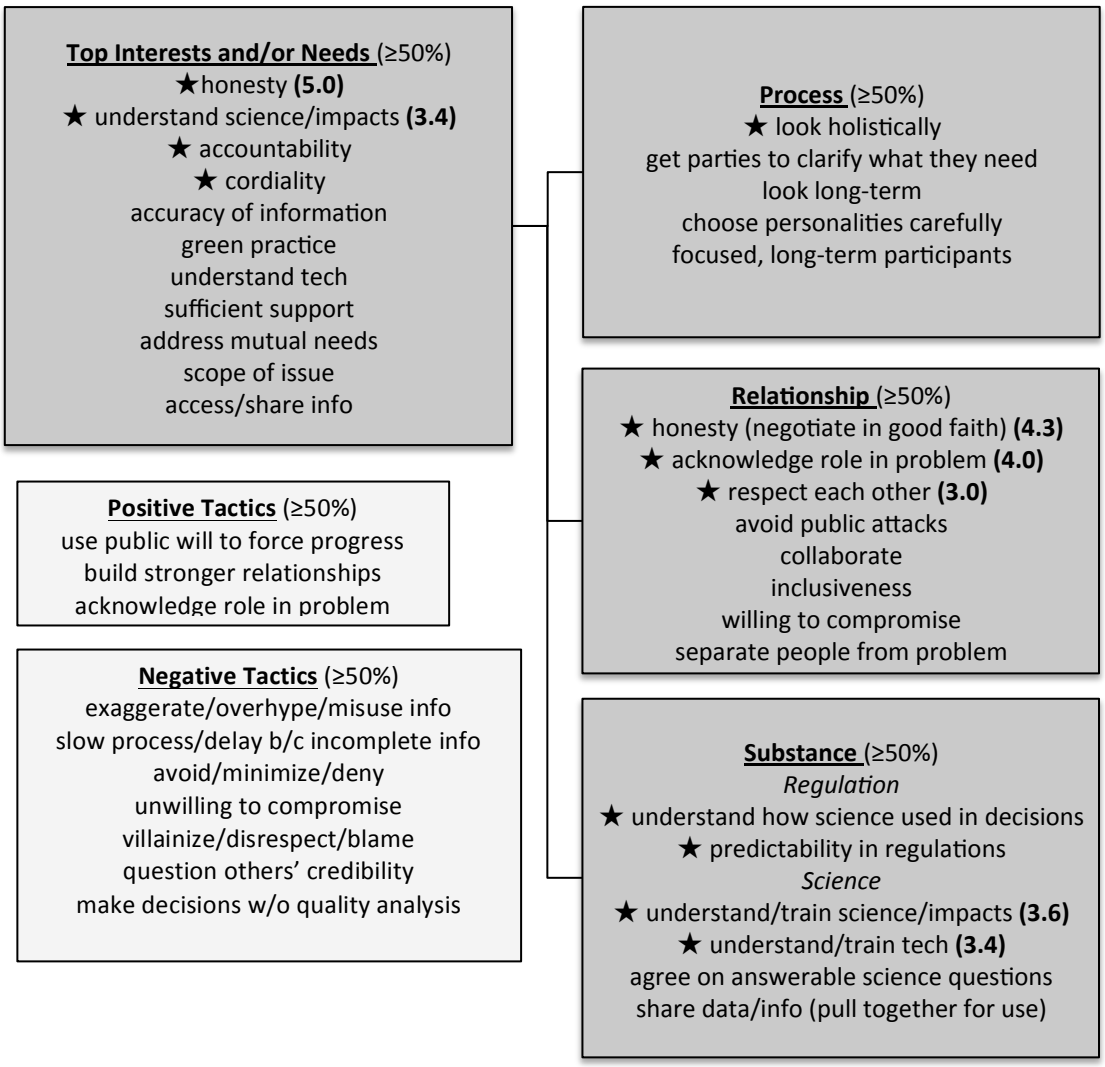


Figure 2.1 Academic (Impact)- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ Indicates ≥71% of spontaneous response from total group members. Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized (weighted), thus indicating greater importance of item to group.

Academic scientists strongly identify with their role (Hackett, 1999), partly given science is still regarded highly as a vocation but also because individuals spend significant resources (e.g., time, money, labor) in preparing themselves for their careers. Group identity is, therefore, very important to scientists as success or failure is largely dependent on how one is evaluated by other group members (Martinson et al., 2006).

Figure 2.1 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Desire to reduce scientific uncertainty

The desire to reduce scientific uncertainty and find the answer to the question (problem solve) was inherently expressed by all members of this group. This could be seen in the high response rate for understanding science/impacts (100%). It is also reflected in the group's improved outcomes for substance (science) with 71% of group response for understand/train science/impacts and understand/train tech as well as 57% group response for agree on answerable science questions and share data/info (pull together for use).

(b) Desire to have regulations better informed by science

Although not a consensus, 71% of the group indicated a need to better understand how the regulations used science. Several members also expressed a desire for the

regulations and government's management of the issue to be updated more regularly with science (i.e., update regulations every 3 years with new science).

(c) Not holding back in order to maintain research funding

Accompanying this strong interest of understanding and solving was also a detected sensitivity regarding perceived criticisms from outsiders about scientists "*always wanting more information*" and the never-ending problem. As on group participant stated, "*It's not a simple six months later they had it all worked out kind of problem. If somebody's saying, "The researchers are just dawdling on this because they're making money on it," you can bet that if somebody actually knew the mechanisms and could prove it with some kind of a scientifically rigorous method they'd write the paper tomorrow. Scientists are all about telling the world about this cool thing that they found. They're publishing it and on the cover of Science and winning the Nobel Prize. But they don't generally hold back on something that they've figured out. It's likely that they'd put something out there before they actually understand it*."

(d) Protect professional credibility

Professional credibility is essential to the scientific identity and success within the field. The need to problem solve while still protecting credibility, however, can be challenging for an issue with a high degree of scientific uncertainty. For example, 71% of group members expressed that scientists may be careful or reluctant to make predictions where there is a large amount of scientific uncertainty given the consequences are high for their credibility. If they publicly provide an 'educated guess' too early then

they may be accused of being anecdotal or lacking scientific rigor. In addition, their 'educated guess' may be found untrue at a later date.

Conversely, there was also a perception by some group members, as well as individuals from other groups, that Academic (Impacts) may be more likely to stay stuck on positions. In this sense, the individual becomes explicitly linked to any public statements he or she may make on the scientific information (e.g., reported research results, stances on effects) given these statements become linked to his or her credibility. This may also explain why several individuals outside of this group commented that scientists are the hardest people to get to compromise.

In a world where professional credibility reigns, these are important risks for scientists. Future collaborative efforts may benefit from the development of methods for scientists to make educated guesses while still protecting their credibility (e.g., expert elicitation where individuals can provide opinions but have them either protected by anonymity or collated through group results versus individual responses (Martin et al., 2012).

(e) Perceived bias (by some) on taking funding from sound producers

There is an observed split within this group about whether or not it is appropriate to take funding from sound producers. All but one of the group members has received funding from a sound producer(s). Two of the seven group members, however, directly indicated an issue with accepting money from sound producers and their perception that this can bias the science and the researcher. One of these two participants stated "…*they need money for their research and so they tread a very fine tightrope. Some of them that*

are maybe a little less ethical will say this is not that damaging, so that they can keep their funding from the noise producers. But, if they say it is no problem at all, then they lose their funding again." Other members of the group felt that funding could be accepted with appropriate measures taken to ensure objectivity and scientific freedom. As stated, "*Users should pay, but they cannot have control over it because if you have control then you have the bias. If you throw the money over the fence and let an objective party do with it what they want, then you have credibility. The credibility and control do not go. They are not compatible*." So, intra-group conflict appears to be existent insofar as funding sources are concerned. Further, perceived attacks on funding bias will likely elicit a strong reaction from some members of this group.

(f) Adversity to exaggerations of information

'Honesty' scored high from this group (71% and a high 5.0 weighting). The group also indicated a high degree of negativity toward the use of 'exaggerate/overhype/misuse info' tactic (71%). In looking at the coded data collectively for these areas, there was a strong indication (86% of group members) that respect for and a desire to work with groups declined if they perceived that group to blatantly exaggerate or overhype the issue. This may indicate a point of contention between some Academic (Impacts) and other groups.

(g) Can I be a scientist and an advocate?

> "*I was really a scientist and a person who had grown up in an extraordinarily liberal town with very strong environmentalist interests. With that mentality, I was suddenly very confused about what team I was on*."

There is a definite perceived division within this group, and even an individual's own identity, on whether a scientist can also be an advocate and still maintain credibility (i.e., advocate for a policy action, environmental protection). Four of the seven group participants (57%) felt other researchers involved on this topic have largely avoided advocating a policy stance (or appear to advocate) and/or are not involved in the regulatory process by choice. Although not outwardly stated there appeared to be an implied perspective from these respondents that scientists needed to have a greater role in the policy development on this issue. The quoted responses below help illustrate.

- "*So I think there is innate hesitation or that step to the transition if I say this answer conclusively does it makes me advocate for something. Am I taking a position and a stance on something?"*
- "*…you are going to have scientists unwilling to speak out. They do not like to weigh into policy that much anyway. It is messy, and it does not do much for their scientific reputation…so there are very few people who are willing to do that job, and it is totally thankless...*"
- "*Sometimes there is not a lot of incentive for academics to work on this issue. For example, in my institution we do have to demonstrate some degree of service to the community, but it is weighted much less than our ability to produce peer reviewed research."*

- "*…there is also a difference between early and late career scientists. Some late career scientists are more willing to stand up and with the benefit and their years of experience. Take a stance on some of these issues and want to make some things happen*."

Section 2.03 Academic (Geo)

"We are for academic research, research for improving knowledge about the earth processes."

"We feel that we could actually find ourselves in a situation where we cannot go to sea anymore."

Three of the 54 individuals interviewed were classified into the Academic (Geo) stakeholder grouping. These individuals were affiliated with two different institutions conducting research that incidentally used noise to study the environment (e.g., earthquake research, ocean mapping). Although this group included individuals from government, their purpose differed from the Government stakeholder category given Academic (Geos) solely do research and are wholly regulated (versus also regulating like those agencies remaining in the Government category).

Figure 2.2 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance, as well as how they perceive various tactics used over time on this issue (either positively or negatively).

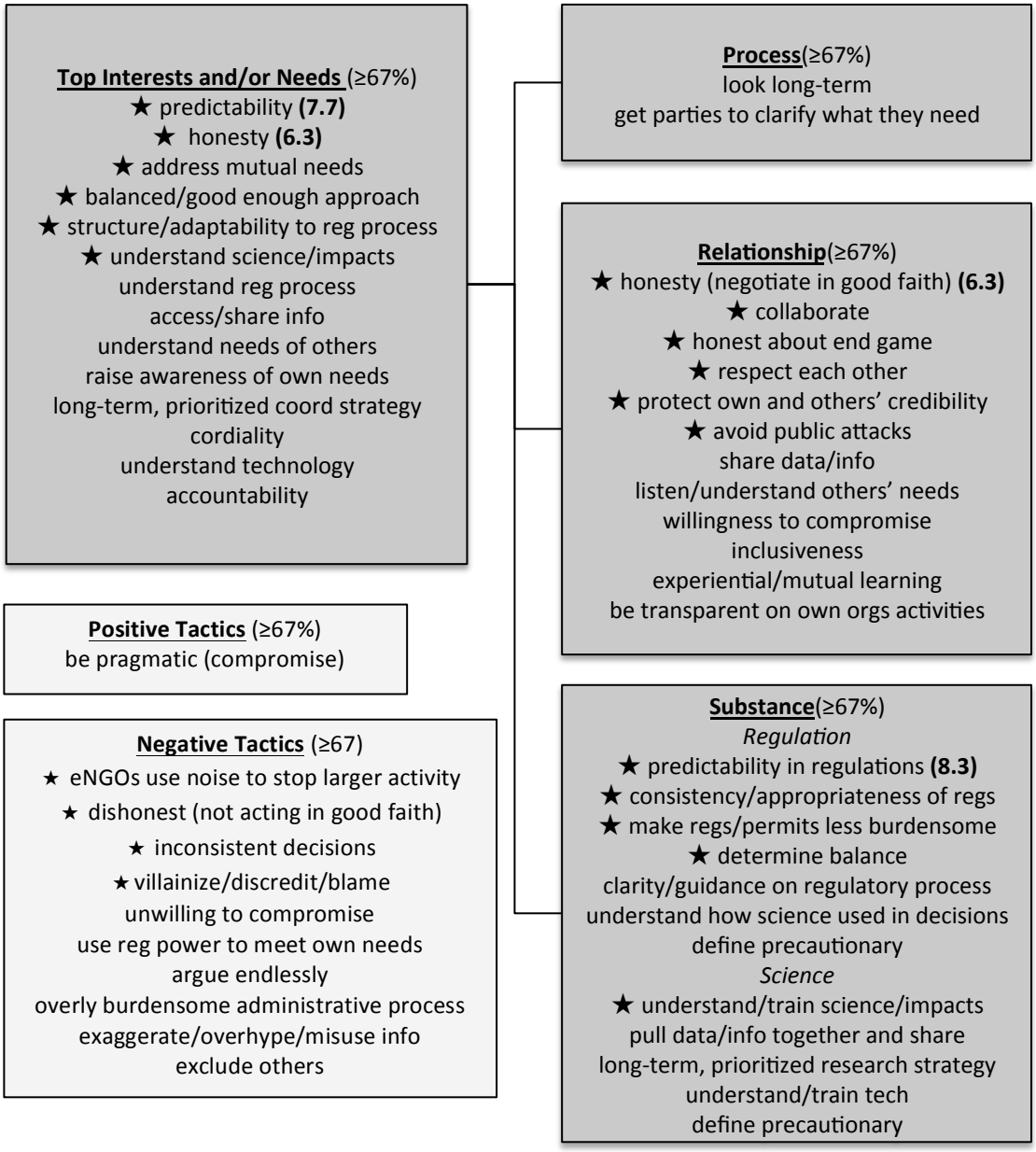


Figure 2.2 Academic (Geo)- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ indicate 100% of spontaneous response from total group members. Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized (weighted), thus indicating greater importance of item to group.

The previous discussion of Academic (Impact) discusses the importance of group identity to individual scientists. Those same findings apply as well to the scientists in the Academic (Geo) category. Academic (Geo) scientists do differ, however, from Academic (Impact) scientists on the marine sound issue in that Academic (Geos) incidentally produce noise during their research that the Academic (Impacts) are largely studying to understand and mitigate effects.

Figure 2.2 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Need to promote value of science produced

In general, the Academic (Geo) members all felt the need to reinforce the importance of the work they do and how the science they create is important for human protection and economic welfare. There appeared to be a need among this group to understand why other parties were opposed, and willing to stop, scientific progress particularly when the science is being gathered for public use. The interest of a 'balanced/good enough approach' ranked very high (100%) with this group as did 'raising awareness of own needs' (67%). The tactic of 'villainize/discredit/blame' was perceived negatively by 100% of group participants. As one respondent stated, "*groups should want the environmental data that we are going after. For example, sea level rise*

on the East Coast. Would you not be interested in knowing as a seaside community about sea level rise and how hazards such as hurricanes and others are coming across there. If your sea level is increasing, you are going to have increased impacts as a result of hurricanes, etc. on your infrastructure there. Yet we get resistance from environmental groups that they do not want seismic surveys…"

(b) Desire to disassociate from oil and gas

There was evidence that the Academic (Geo) group believes the reasoning for the survey (appropriately mitigated) should be considered by other parties in decisions on whether or not to protest its conduct (i.e., scientific research needs outweigh energy exploration). It appears this group may attribute, at some level, the resistance to their work as being due to outside parties associating academic seismic surveys with those conducted for oil and gas exploration purposes. Although the surveys are technically similar between those used in scientific research and those for hydrocarbon exploration, as are the potential environmental impacts, the purposes differ. Academic (Geos) may view opposition to seismic surveys as being more about anti-oil and gas sentiments and preventing further offshore oil and gas development, given seismic is the first step in such development. If outside groups allow academic seismic to occur then it weakens arguments for fighting oil and gas seismic (and ultimately preventing oil and gas development). As a result, seismic surveys for academic purposes get caught up inadvertently in the fight against fossil fuel expansion. As one stated, "*…we are not in it for oil and gas exploration. We are for academic research, research for improving knowledge about the earth processes and things*" and that groups should "*want the*

environmental data that we are going after," regardless of any technical similarities between the surveys. These viewpoints and sentiments consequently may make it more challenging for Academic (Geos) to collaborate with Oil and Gas, given Academic (Geo) desires to keep separation between the two groups.

(c) Concerns regulatory process will stop scientific progress

There was a clear frustration from Academic (Geos) between their ability to conduct science and being able to successfully navigate the regulatory process. Predictability in regulations scored very high with this group (100% and a weighting of 8.3) as did consistency/appropriateness of regulations, make regulations/permits less burdensome, clarity/guidance on regulatory process, understand how science used in decisions, define precautionary and determine where balance should be. As one responded stated, *"…there is not a clear process whereby that information or the existing level of scientific information can be unemotionally evaluated and run through a clear process. That an agency that wants to do an at sea event can have the confidence that we can follow this process on such and such a timeline…"*

(d) Group members are naïve about marine sound issue

One respondent from this group emphasized that the group as a whole is too reactionary and many individuals are still naïve about the influence of the marine sound issue. They see many of their group as still feelig the science needs justify any potential effects. As one participant stated, "*There seems to be that level of naivety, that their science is good enough to carry the day. And, at the end of the day, what we try to tell PIs is no one gives cares about your science… What they care about is your impact on*

marine mammals, and what is your impact on fisheries and on recreation and all this other stuff. And, the sooner you can get in that mindset, the more likely it is that you are going to be able to design a program that gets you most of what you need, but also makes it possible for you to actually go to sea and do the work."

Section 2.04 Environmental NGOs

"One of the concerns we've had in the NGO community is that we will study some issue to death, that we'll just keep saying we don't have enough information. So, until we do you know, we'll leave the status quo in place and then when we get more information we'll adjust our management scheme. And that, in my opinion, is the quintessential opposite of the precautionary principle."

Eight of the 54 individuals were classified into the eNGO stakeholder grouping. These individuals work for five different eNGOs that actively advocate to safeguard earth and protect wildlife and habitats. All of the individuals (and their affiliated organizations) have been involved in the marine sound issue for ten plus years, although at varying degrees of focus. Figure 2.3 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance) as well as how they perceive various tactics used over time on this issue (either positively or negatively).

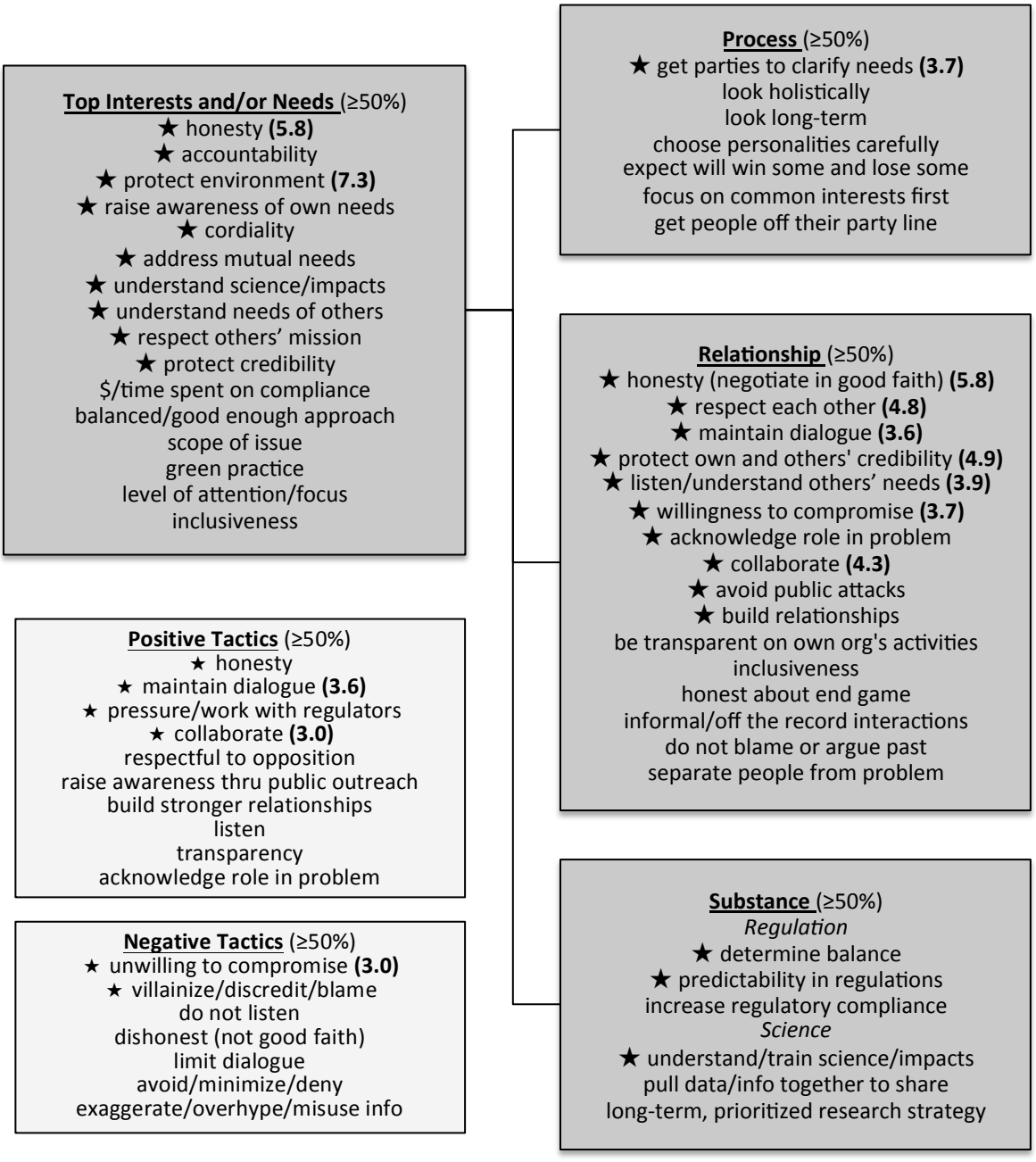


Figure 2.3 eNGO- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ indicate ≥75% of spontaneous response from total group members. Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized, thus indicating greater importance of item to group.

The literature on environmental identity provides varying definitions of what it means to be an environmentalist (Thomasow, 1996; Light, 2000; Clayton and Opotow, 2003). Paehlke (2000) identified thirteen central environmental values (examples below). These are included for the purposes of this discussion in order to help elucidate values associated, in general, with the environmental identity. Although these values are perhaps most meaningful collectively in explaining the environmental identity, some of these individual values can also be found throughout other stakeholder groupings as well.

- An appreciation of all life forms and a view that the complexities of the ecological web of life are politically salient.
- A sense of humility regarding the human species in relation to other species and to the global ecosystem.
- A global rather than a nationalist or isolationist view.
- An extended time horizon-a concern about the long-term future of the world and its life.
- A sense of urgency regarding the survival of life on Earth, both long term and short term.
- A belief that human societies ought to be reestablished on a more sustainable technical and physical basis. An appreciation that many aspects of our present way of life are fundamentally transitory.
- A revulsion toward waste in the face of human need.
- A love of simplicity, although this does not include rejection of technology or "modernity."

- A measurement of esteem, including self-esteem and social merit, in terms of such nonmaterial values as skill, artistry, effort, or integrity.
- An attraction to autonomy and self-management in human endeavors and, generally, an inclination to more democratic and participatory political processes and administrative structures.

In regards to the marine sound issue, the eNGO members participating in this research all felt their main roles were to raise awareness on the issue and increase accountability and environmental protection. Perceived power imbalances with other groups were also central to the group identity.

There was a high level of agreement on top interests/needs and recommendations for relationship within this group (16 interests and 15 relationship recommendations with many garnering 75% to 88% response). The differences, however, started to appear in the data for tactics as well as competition for members and media/public campaign interest indicating potential for intra-group conflict in these areas.

Figure 2.3 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Level playing field (power imbalance)

> *"First of all, you have to level the playing fields. If you want stakeholders involved, they have to be equally powerful, or they have to be given enough resources to be equally powerful."*

Power imbalances are central to identify conflicts (Rowley and Moldoveanu, 2003). Data revealed a sense among all the group participants interviewed of a constant sense of 'less' when compared to other stakeholder groupings. This included less ability to maintain equal awareness on the marine sound issue, less access to information, less resources to attend scientific and policy meetings, less presence in important discussions and ultimately less influence and environmental wins. Participants perceived other stakeholder groups as having more staff and financial resources to devote to the issue and ultimately more influence on the direction the issue has and will head. Consequently, there is a strong desire among this group to adjust the power relationship so that they can see discussions as more inclusive and fair. Without such a level field, group participants are left with pursuing more aggressive tactics to gain power. In the cases of these eNGOs this means more emotive public and media campaigns and even potentially litigation (Milne et al., 2006). Many of these tactics are the source of conflict with other user groups and will be discussed in Chapter 3.

The only thing that some eNGO participants expressed as having more of than other groups was losing. As one participant stated, "*It all starts with both sides coming to the table with the understanding that at some point one side or the other is just going to have to accept they can't do all they want to do. And we, as the NGOs, are living with that reality every day. We constantly have to give in. User groups don't really live with*

that very much. Sometimes yes, but not always and far less often than we do. So, we're already better negotiators in the sense of we're able to accept defeat. We're used to defeat. It happens to use all the time."

(b) Increasing power through public messaging

One of the ways many eNGOs try to increase and balance power is through media and public campaigns. At the same time, eNGOs are criticized by some for perceived inaccuracies or emotive wording and visuals in the messages that are relayed during these campaigns. Overall, this presents a struggle for many eNGOs to try and balance the ability to reach the public and raise awareness on a highly technical issue without providing inaccurate information. As one member stated, "*As an organization we try really hard always to tell the truth in everything we say. We try not to exaggerate. I mean, we might use words that are emotive. We need the public to understand that there's a problem because we need the public's support to do something about it. The government is only going to change its policy if constituents are going to their politicians, politicians are talking about it, and so on*." Further, "*there are irresponsible eNGOs…and that's unfortunate. I hope that we're all mature enough not to let that get in the way…when that happens*."

Although not directly raised by eNGO participants during the interviews, other observations and conversations with eNGO members did reveal an apparent intra-group conflict between science/ policy staff working for the eNGOs and the actions of the eNGO membership and campaign staff. Specifically, this appeared as continued frustration among science/policy staff on how their membership and campaign staff

misuse information, purposely inflame the issue at times and ultimately make it harder for the science/policy staff to gain and maintain credibility and working relationships with other stakeholders. This appears supported by the highly negative perceptions of these staff tactics by other stakeholder groups, how other groups link these tactics to eNGO individuals as a whole and how these tactics clearly increase conflict. (See Chapter 3 for further discussion.)

(c) Differing end goals among group member organizations

Although this research focused on individual responses versus organizational responses, it was apparent that there are instances where organizational missions may differ to the point of generating intra-group conflict. For example, some of the environmental organizations have taken public stances against the use of certain sonars by the U.S. Navy. Other organizations are unwilling to focus on public campaigns and/or litigation against the military, given the value of the military's mission and/or for fear of losing support from veterans on boards and within membership. Another example concerns oil and gas development. Some, but not all, of the environmental organizations are outwardly opposed to the expansion of fossil fuel production while others acknowledge it will occur and seek to advocate and compromise for careful management.

(d) Others do not listen given assumptions that all eNGOs have radical stances

Some eNGO members expressed frustration with a perception of other groups assuming all eNGOs have the same end goal. Further, even if the differences were explained, these other groups would not believe that was the case. As one eNGO

member stated, "*Nothing I say that's reasonable, pragmatic, rational, makes the slightest bit of difference to them because I am opposing something that is their identity. They lump me in with those who are far less rational and professional and are in fact screaming whale killer at them. So, you know they don't make the distinction after a point. They don't bother to make the distinction anymore. They just lump us all together because they feel put upon*."

This outcome was also reflected as having prohibited the ability to resolve specific disputes. As one participated stated, "*I think they felt that our policy position on this, which was not to eliminate low or mid-frequency sonar, that would be absurd on our part—completely unrealistic. But, of course there were activists out there who did want it to just disappear. But you know it wasn't going to happen. You know, we're pragmatists. So, it was almost as if they thought that we were saying…we were with the radicals and saying no sonar at all. And, no matter how often we said we're not against sonar use—because that's simply impractical—what we're against is unlimited sonar use. Why they were hearing one thing when we were saying another, I just do not know*."

(e) Gladiator vs compromiser

"*It is a lot easier for the environmentalists to play the role of gladiator than the role of compromiser*."

Although related to differing organizational end goals, there also appears to be a level of pressure within the identity of this eNGO community for individuals to push hard to achieve the greatest amount of environmental protection and appear to champion the cause. Although no explanation was offered for such view, it may potentially be related to the lack of power often

expressed by environmental organizations and the need to maximize gains in those instances where greater power is achieved. Regardless of reasons, the preference for the gladiator within the environmental community may make it more challenging for its members to compromise with the 'other side,' making issues like marine sound remain intractable. Further, individuals and organizations seen as 'compromisers' may, in turn, have greater difficulty in building alliances within their environmental community or even lose credibility with their peers. On the other hand, it was also acknowledged by several group participants that 'compromisers' may have greater ability to build partnerships with external organizations, like the government and business community, who generally avoid aligning with 'all or nothing' organizations. As one participant noted from an individual (not organizational) perspective, "*I would say there's absolute value in speaking with the oil and gas industry. Because at the end of the day we have to be real about what is going to happen. We can shout from the rooftops about how much we don't want drilling to be expanded, but we're still realistic and pragmatic enough to say, "Don't do it, but if you are going to move forward with this, we need to make sure that we're not using the most harmful technology out there. We need to make sure that we can lessen the effects as much as we can and as quickly as we can*."

These points reinforce the importance of understanding the distinctions between how an individual approaches a conflict versus a group. When the conflict is maintained at the group identity level, then group members align to protect against threats to their group. They are less likely to operate at the individual level and will act much more aggressively or competitively when their group is being attacked. At the same time, the

other ‘attacking’ group no longer sees individuals on the other side, but only the group, and makes prejudicial assumptions about how all members of the group will behave. The value here of a transformative approach is it brings the focus away from the group and back down to the individual level where there is a greater ability to operate with more respect, creativity, flexibility and compromise.

(f) Competition for membership and public attention

Just as for-profit businesses compete so do environmental organizations. Most, if not all, of the eNGOs involved in marine sound survive on membership. The more members they can attract then the more resources they have toward meeting their mission of environmental protection. Although organizations each isolate their own niche, there is inherently a larger pool of people they all seek to gain membership from, particular on specific issues like marine mammals and sound. So as eNGOs build alliances on specific issues, they end up competing for the same set of members as well as media and public attention. Again, these alliances are central to empowering eNGOs, and the causes they promote, so there is certainly a friction between aligning and the competitive environment it can create. For example, one respondent stated, “*The big one was communications. Do not beat me to the punch on media. No matter what anyone says on any conference call, everyone goes back and does their own thing when it comes to external communications*.”

(g) The one leader approach

Due to staff and resource constraints, eNGOs often build alliances but divide who takes the leading role. This approach helps eNGOs divide and conquer across the wide

array of environmental issues but still depend on one or several organizations to keep the others involved.

In the U.S., the Natural Resources Defense Council (NRDC, http://www.nrdc.org) has taken the leadership role concerning the eNGO alliance on the marine sound issue. This is largely given the highly technical nature of the marine sound issue that requires constant and full-time focus. NRDC, in turn, keeps the other interested eNGOs informed, serves as the go between with government, academics, the U.S. Navy and industries, and has been the lead on litigation in the U.S. This is not to say that other eNGOs do not maintain involvement in marine sound, for many do, but that NRDC serves as the leader in the U.S.

On one hand, it could be considered detrimental to issue conflict resolution to have one single actor leading a stakeholder group. For a large part, the ability to compromise or reach tractability is dependent on that one eNGO's willingness to do so or not do so. On the other hand, even if the leader eNGO wants to seek compromise, others in the group may oppose that approach and intra-group conflict heightens. None of the eNGO participants remarked on this pros and cons of the single actor approach, so it remains to be seen what effects it may have on the marine sound issue.

Section 2.05 Government (Federal)

> *"…There is compromise necessary within government itself and that is even before you get outside of government to dealing with industry groups, NGOs and so on."*

Fourteen of the 54 individuals interviewed were classified into the Government (Federal) stakeholder grouping. In the U.S., there are over 12 agencies that have a role or interest in sound and marine mammals. The 14 individuals interviewed under this group represented the eight key agencies having more involvement on the issue (although emphasis is added here that interview data represent responses from individuals and not organizations). By large, the National Oceanic and Atmospheric Administration (NOAA) plays the greatest role in the U.S. in regulating the effects of marine sound on marine mammals. Their mandates include the Marine Mammal Protection Act (MMPA; 16 U.S.C. § 1371 et seq.) and Endangered Species Act (ESA; 16 U.S.C. § 1531 et seq.), arguably the most protective U.S. environmental laws. The U.S. Fish and Wildlife Service (FWS) also shares responsibilities under the MMPA and ESA but has not played a significant role in the marine sound issue to date. The U.S. Marine Mammal Commission (MMC) has a non-regulatory but oversight role.

All other members of this group regulate or oversee other entities (e.g., the Bureau of Ocean Energy Management (BOEM) and Bureau of Safety and Environmental Enforcement (BSEE) regulate the offshore energy industry, Department of State handles international agreements). Importantly, however, these other agencies are also regulated or largely affected by actions taken by NOAA and MMC.

Figure 2.4 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance) as well as how they perceive various tactics used over time on this issue (either positively or negatively).

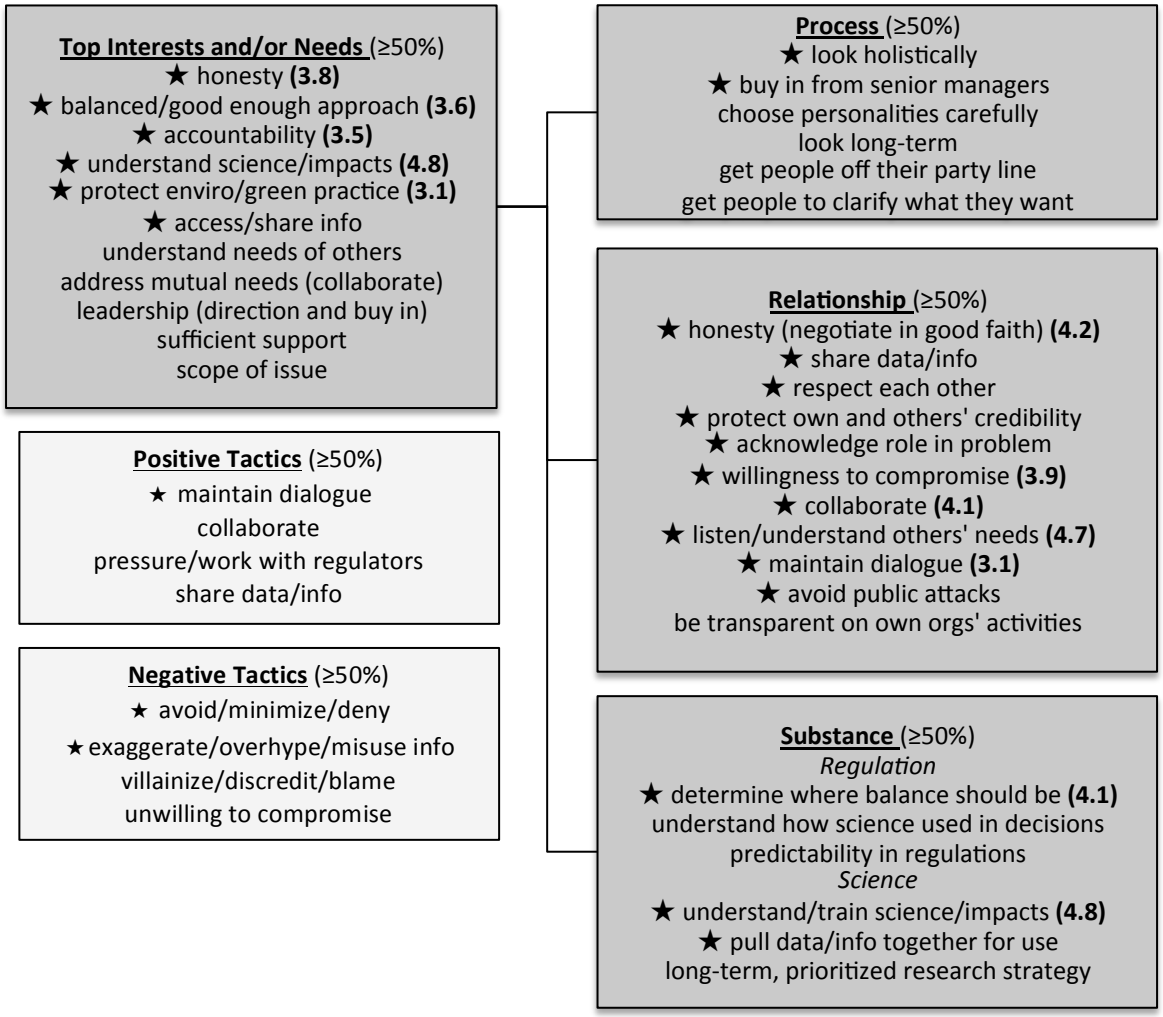


Figure 2.4 Government (Federal)- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ indicate ≥71% of spontaneous response from total group members. Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized (weighted), thus indicating greater importance of item to group.

While federal government has always had peaks and valleys in approval ratings, perceptions of its efficacy appear to be at near all time lows. Dukes (2006) points to three main factors influencing this viewpoint in contemporary democratic society. The first is that there are many problems, and they seem to be getting worse. The second is there is little hope that effective solutions to these problems can be found. The third is that even if solutions are found the current governmental institutions are incapable of implementing them. Collectively, these perceptions (or realities) create a 'crisis of government' (what Dukes calls 'idealogy of management') where they combine to create gridlock. Dukes argues that the push then becomes for efficiency and productivity whereas instead these intractable issues need a transformative approach grounded in more engaged communities, responsive governments and the capacity for more creative problem solving and conflict resolution.

Figure 2.4 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Battling public perceptions and desire to build a better process

Federal workers engaged on the marine sound issue do not appear immune to current societal perceptions of government. They are aware of criticisms of overly bureaucratic processes, inefficiencies, poor communication, excessive reactivity (versus

proactivity), and perceptions of government workers as tending to 'check the box' and agencies being heavily influenced by lobbying interests.

Participants in this group expressed a high degree of interest in understanding others' needs, collaborating, compromising and looking for holistic solutions. Most respondents from this group saw themselves as dedicated individuals trying their best to work within a regulatory system not built to handle challenging issues, such as marine sound. These challenges grow with time demands and political pressures and create an admittedly inefficient process. Most group members expressed a desire to create a meaningful, efficient, practicable yet still protective process but noted the challenges of doing so within the federal system. As one participant noted, "*It is not like we have not been trying. I know how hard we are trying. But our government is not set up to encourage us to do this kind of work*." Another stated, "*Sometimes it is all about the process and not the substance*."

(b) Power imbalances across agencies

Interview data support some recognition of difference in top interests between NOAA/MMC and other agencies. These are likely related to distinctions between agency missions, including those agencies that purely regulate/oversee (NOAA/MMC) and those that are affected or regulated by these agencies (the remaining group members). So, to some degree, there is an inherent power issue among the agencies involved on the marine sound issue.

In comparing responses on protecting the environment versus green practice, for example, NOAA/MMC indicated a larger goal of environmental protection while other

agencies emphasized a greater goal of green practice (which also aligns with a slightly greater preference by the other agencies for a balanced/good enough approach). Additionally, NOAA/MMC data indicate a much greater need in level of attention/focus and sufficient support, possibly reflecting internal inadequacies between agency mandates, staffing and budgets. There was also a greater expression of need by NOAA/MMC to address mutual needs and understand needs of others, potentially reflecting external criticisms and wanting to understand and improve inefficient processes.

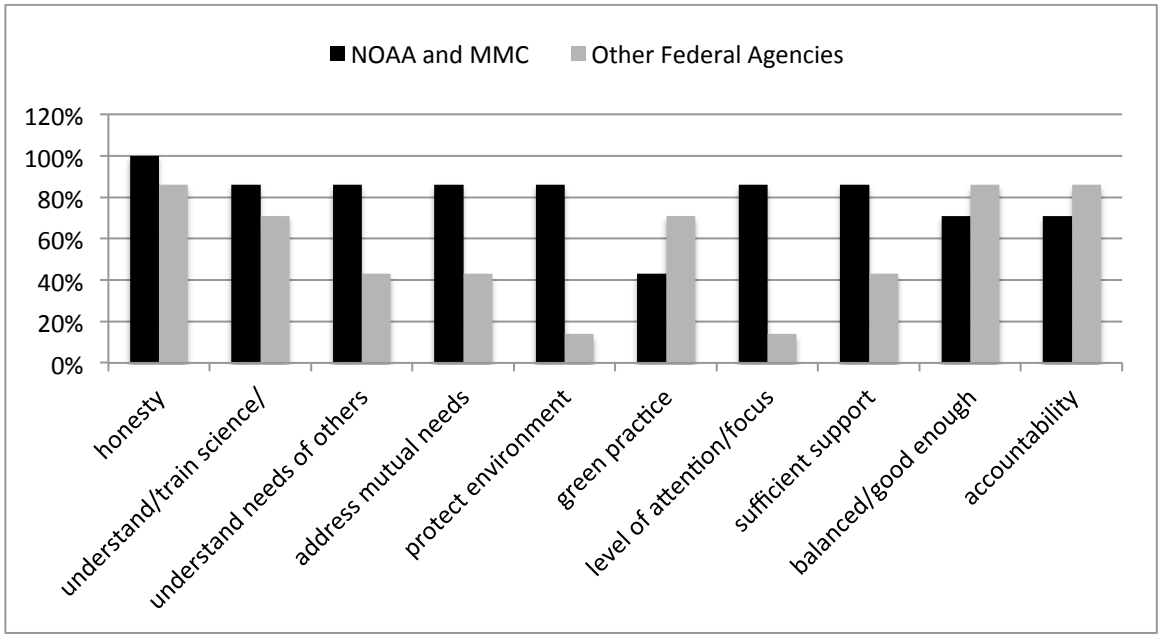


Figure 2.4.1 Comparison of top interests between NOAA/Marine Mammal Commission and all other federal agencies

(c) Desire to be more proactive and find a balanced approach

This group also clearly wishes to become more proactive and avoid "*just letting the stakeholder group drive the bus and then just reacting to it*." Others recognized the constraints to proactivity, including statutory limitations, political influences and time pressures inherent in making decisions. On the latter, one participant noted "*if you are going to wait for the regulator, you might be waiting a long time because we have got other things we are having to deal with despite our best intentions*."

> "*So we ask people to do stuff that limits the effectiveness of their mission. In some cases, we ask them to pay lots of money to do monitoring. I just want us to be getting the best protections and information that we possibly can and at the least cost to their mission."*

Most group respondents also recognized the need for the government to determine where the balance should be (71% NOAA/MMC and 86% all other agencies). Participants advocated for a shift within their agencies to "*step up and internally make some decisions about what's acceptable*." One respondent pointedly noted, "*I think the role of the managers is not being fully realized. It is to take information- and I mean something less than data. It is something derived from inference, intuition, and common sense. It is based on something less than data and scientific certainty. So I think managers should be that leading edge pushing for good decisions, pushing the process, and I am not sure that is happening enough. I think managers, in many cases, recline back and want to wait for science and scientific certainty. And that their decision is just attributable to science.*"

(d) Differing relationships among agencies

Despite the differing mandates, many respondents noted most of the agencies get along well. As one participant noted, "*our interests are the same. We just have somewhat different perspectives on certain things*." This sentiment, however, did not exist everywhere. One respondent noted frustration "*that all these agencies have different agendas, and we are the same federal government. Why aren't we pulling together and coming up with a common sense approach*?" When breaking down this distinction further, it appeared that individuals who have been engaged on the issue longer tended to see the intra-agency relationships as good whereas the individuals newer to the issue had a more negative outlook. This may indicate that those engaged longer had also built more sustained relationships with each other and/or possessed a greater knowledge of the regulatory issues and understanding of each others' struggles.

(e) Challenges within your own agency

Several respondents noted that even within their own organization there existed a range of pressures and political leans. For example, approving a development project can lead to "*dyed in the wool animal protection people or habitat protection people saying this process is a total sellout*." Alternatively, a decision lending toward the environment can have the opposite effect in that pro-development interests within an organization may see it as a sell out. This can depreciate trust within the organization and make it harder for the individuals to collaborate with outside groups if other sectors of their agency are undertaking actions that may be perceived as contradictory or even disingenuous.

(f) Challenges with openness in public situations

There is no doubt, based on participant responses, that federal members feel the need to guard what they say in public. As one group member stated, "*I think in particular government people are going to be very cautious in what they say in a more public meeting with a wider array of stakeholders. In some ways it is a shame as it does inhibit the conversation. It is difficult. I know I certainly have my guard up when I go into a public situation about saying anything that is going to be contradictory that would call them to question current management*."

Although some of this guardedness may be attempts to appear neutral, it is also possible that the existing extent of litigation in the U.S. has had an effect. For example, one participant recalled a situation where in the past staff scientists had been able to talk directly with eNGOs. Once the lawsuits began, however, the ability for the same open dialogue diminished considerably. As one participant stated "*you're always worried in the back of your mind that you're opening yourself up to them to see a litigative chink in your armor to go after you. Your opening yourself up to somebody who is an adversary already, by the nature of what they do they've already declared they're an adversary."* Further, another group member described how the litigious environment prohibits their ability to reach agreements on their own. As stated, "…then you have got to get it through the lawyers. So although I keep trying to tell them, "*Do not worry. We have a good agreement with the environmental organizations, and they will not sue us because they know we are going to come back and work with them. In my experience, the lawyers will say, "You are kidding me, right?"*

Section 2.06 Navy (U.S.)

> *"The Navy certainly got drug into it in the beginning and did not want to. But now there is a process in place. There is a team of over 80 scientists across the Navy focused on this topic. We have accepted this is going to be a long-term problem that we need to address. We have invested in the right direction and are thinking ahead of the problem. That is quite a mindset change for the Navy in this topic, and it shows how important it is."*

Eight of the 54 individuals interviewed were classified into the Navy (U.S.) stakeholder grouping. Some of the individuals were from the civilian side of the Navy while others from the operations side. Participants included Navy managers, scientists and lawyers.

Although many navies of the world are also involved in the marine sound issue, the participants interviewed within this group are all associated with the U.S. Navy.

Figure 2.5 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance) as well as how they perceive various tactics used over time on this issue (either positively or negatively).

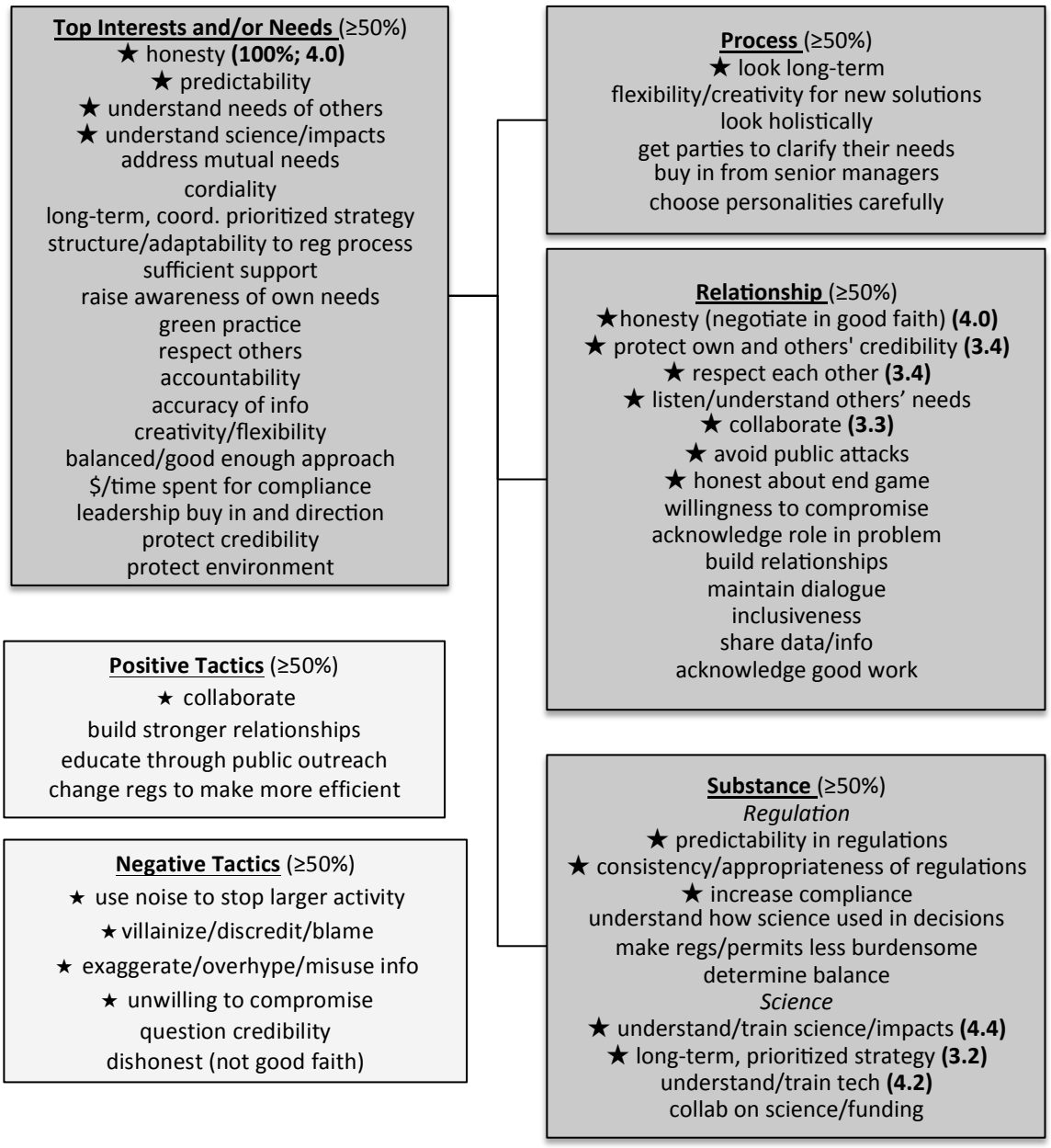


Figure 2.5 Navy (U.S.)- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ indicate ≥75% of spontaneous response from total group members. Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized (weighted), thus indicating greater importance of item to group.

Honor, courage and commitment are the Navy's core values (https://www.navy.com/about/tradition.html; accessed March 20, 2015). Given the time, commitment and emotional resources dedicated to membership of this group, as well as the initial training provided to become its member, it is no surprise that the U.S. Navy identity is strong and pervasive in the participant responses provided during this research.

In regards to sound and marine mammals, the Navy (U.S.) group perceives themselves as good stewards who do care about the environment (75%) and whose work has helped progress scientific understanding on the marine sound issue (88%). Fifty percent felt the need to reinforce the importance of their mission and the sacrifices made by the military. Another 50% emphasized the need for public campaigns to provide accurate information and counteract the negative image of the U.S. Navy portrayed by some other stakeholder groups over the marine sound issue.

Figure 2.5 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Have made progress

Many Navy participants acknowledged that, during the 1990s, the Navy did not immediately accept marine sound as an issue. Since then, however, all participants expressed that the Navy (including its senior management) has accepted the issue and has devoted considerable time, energy and resources toward its resolution. This comes in the form of changing operations, gaining legal compliance and investing significantly in scientific research. There was no dissenting opinion from the group participants regarding this finding. One participant noted, "*We are trying to answer the question as scientifically-based as possible, good or bad. I think that leads to some credibility, hopefully, in the end."*

(b) Unfairly characterized by eNGOs despite progress

There is very clear frustration among group members that eNGOs never acknowledge the Navy's good work and continue to attack the Navy's credibility. Protecting credibility is extremely important to group members (88%) as well as respectful behavior (also 88%). As one respondent stated, in regards to early interactions between the U.S. Navy and eNGOs on this issue, "*One of the interesting things about military culture -- they're trained to be very respectful and very polite and very diplomatic and very restrained and very unemotional and to confront people that were calling them horrible names and stuff like that, you know it was upsetting to many of them and then to some of them it triggered you know this very strong antipathy…*" The identity conflict between the U.S. Navy and eNGOs remains central to the intractability of the sound and marine mammals issue.

(c) Costly and timely compliance

There was a consistent message from group members about perceived ineffectiveness of an overly burdensome and costly regulatory process. Over half stated that compliance costs were unreasonable. As one participant stated, "*We are being held hostage to a five-year process primarily for MMPA to redo this thing all the time at a significant expenditure of resources, the dollars and manpower. And, I think there are better ways to do it, and I would like to see the government move towards a more efficient process for the MMPA and ESA*."

"We have spent $500 million going through the administrative process of giving permits to operate sonar. We have developed and obtained permission with a set of controls and management structures to minimize the effects. But, we spend a hundred times more on the process than we do on the controls. And, that seems to be out of balance."

"I have been in regulatory programs and looked at air, water and waste issues. Now, sound, toxics, a lot of different issues that I have been engaged with. But, in my time, I have not seen a process that is so administratively burdensome in any other aspect of environmental control."

(d) Need to control the message

Within the Navy, there is an inherent need control the message in order to protect sensitive information. Years of lawsuits and negative publicity on the marine sound issue appear to have expanded the inherent need of the Navy to control the message. It is very difficult, if not impossible, for a Navy employee to speak in a public venue on marine sound issue without first getting approval and then review of content. The up side to this approach is that it helps protect against lawsuits and avoid unintentional messaging that later gets twisted by the media. It does, however, have a downside in that it limits the ability of Navy employees to engage more openly in stakeholder dialogue and may even

confine the Navy's ability to promote their progress (and gain the acknowledgment sought in #2 above as well as accuracy of information). As one Navy scientist put it, "*I am also frustrated with the Navy that they are so gun shy now from all the lawsuits that they are reluctant to put good PR out there. They are reluctant to highlight our programs because they are worried that any data we have might be tossed back at us in a negative way*." There did seem to be some signs of change in this area, as evidenced by several Navy websites that seek to provide accurate information (or contradict inaccurate information)-- http://greenfleet.dodlive.mil/environment/marine-mammals-ocean-resources/navy-and-marine-mammals-fact-vs-myth/.

Section 2.07 Oil and Gas

> *"I think that industry operates in a much more ethical way. I'm talking the broad industry. I know that there are always bad actors. But broadly I think industry is held to a higher standard than that. If it is known that there are important bad things that happen from our operations, then we want to do something about that. We want to not have those things happen. We don't want to cause bad environmental issues, but what we do want to find is a balance."*

Twelve of the 54 individuals interviewed were classified into the Oil and Gas stakeholder grouping. They represent managers, scientists and engineers working within this industry.

Nine of the participants worked for four Exploration and Production companies (E&P), a specific sector of the oil and gas industry that focuses on developing and producing offshore hydrocarbon resources. Three of the participants worked for three

Geophysical Contracting companies (Geo Co.), who collect geophysical data to locate hydrocarbons or characterize the surface and subsurface of leased areas for E&P companies. Although each group has a distinctive purpose, they are closely connected by the intersect of their missions and reliance on each other for financial and data support. This section provided results for the Oil and Gas group as a whole but also discusses differences between the E&P and Geo Cos. that are important to the conflict surrounding the marine sound issue.

Figure 2.6 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance) as well as how they perceive various tactics used over time on this issue (either positively or negatively).

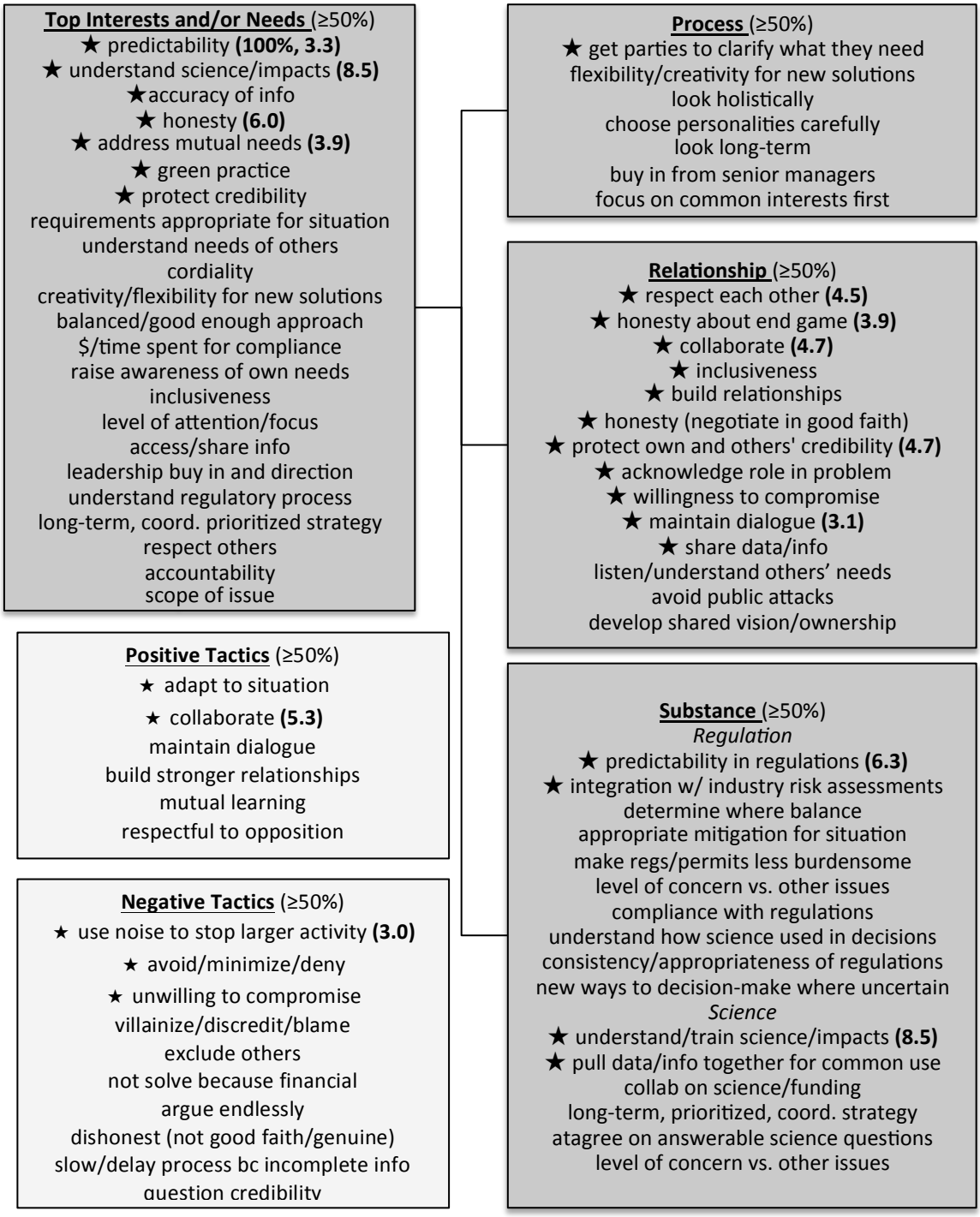


Figure 2.6 Oil and Gas- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ indicate ≥75% of spontaneous response from total group members. Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized, thus indicating greater importance of item to group.

To talk in generalities about the identity of the Oil and Gas industry at large is challenging. Hundreds of Exploration and Production (E&P) companies and Geophysical Contractors (Geo Cos.), the focus of this research in terms of oil and gas, operate in U.S. offshore waters. The service and supply companies supporting this work number in the thousands. Despite these numbers, data did reveal numerous areas where participants did express a high level of consistency in response, indicating areas of common interest and challenges, and where these participants identify as a group.

Figure 2.6 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Great need for predictability

> "*You are going from something that is a known to something that is very much an unknown. And depending on who has the power of the pen, you could find yourself in a very compromised position*."

This is clearly central to the Oil and Gas stakeholder grouping. It was identified as a top interest by 100% of respondents. Further, it scored a weight (emphasis) of 13.3—the highest weight recorded across all responses from any group. There is clearly great potential for making the marine sound issue more tractable for this group if the level of predictability (mainly in regulations and requirements) can be enhanced.

(b) Culture of problem-solving

Problem-solving appears to be inherent in the participant group responses as well as the industry as a whole. As one participant pointedly stated, "*We are basically an engineering industry. We understand the concept of solving problems. What is very difficult for us as an industry, and the management of the industry, is to understand a problem that is never solved."* In this context, there did not appear to be an assumption that the marine sound issue could be easily or quickly solved. As one participant noted, marine sound is "*a life of offshore industry problem*" and that long-term strategies and investments are needed. Interview data do suggest that the perception of marine sound as an unsolvable problem is not about lack of potential solutions. Rather, it concerns the perception by this grouping that no matter what they do the eNGO groups will never be satisfied and the issue will remain forever intractable.

(c) Desire to better understand (both science and regulations)

Understanding both science and regulation also scored very high for this stakeholder group. There was an emphasis on better understanding the regulatory process and reducing the many unknowns it can bring. One respondent stated that "*one of the biggest unresolved non-technical issues is regulatory uncertainty*" and that in the U.S. system "*it is virtually impossible under the MMPA for a person to understand that they are acting within the law or not*." Many remarked about inconsistent application of regulatory requirements both across companies and industries but even among an individual company's experience across geographic areas (i.e., processing and conditions differ inexplicably depending on where operating in the U.S.).

There were also references to the development of industry initiatives to better understand the state of science and unanswered questions. This appears to come in the form of individual company research initiatives but also collaborative efforts, such as the Joint Industry Programme on Sound and Marine Life (www.soundandmarinelife.org), the Arctic Oil Spill Response Technology Joint Industry Programme (http://www.arcticresponsetechnology.org) and the Chukchi Sea Environmental Studies Program (https://www.chukchiscience.com).

(d) Need for respect and credibility

Group participants provided many examples of perceived unfair criticisms, public attacks and a general sense of being portrayed as distrustful and "*always trying to pull the wool over everybody's eyes*." Respondents recounted industry science has been labeled as "*worse than tobacco science*" no matter how much independent peer review occurs. Biologists working for industry have been openly called "*biostitutes*" at professional science meetings. Evidence also exists on the Internet depicting negative perceptions of oil companies, such as airgun exploration as a "*gateway drug to offshore drilling*" (see http://switchboard.nrdc.org/blogs/mjasny/obama_opens_the_east_coast_to.html accessed on March 12, 2015) or "*oil is a snake oil cure*." Such statements and characterizations are importantly fueled by the beliefs of those making them but their effect on participants within this group, at least in terms of the marine sound issue, appears profound and lasting.

Coinciding with the development of these research efforts noted earlier was also an expression of frustration about how industry-funded science is viewed. As one

respondent stated, in regards to counteracting negative portrayals of industry science through the development of the Joint Industry Programme on Sound and Marine Life (www.soundandmarinelife.org), "*there are always going to be folks who we're not going to change their minds. They're always going to say, "You can trust it because it was funded by industry." So we thought about that from the very beginning, about having external advisors. Sending the proposals out for external review and having an external advisory panel that weren't industry people. We did an awful lot in saying we're going to make all the data available. We're not just going to let the research be published in the literature, but after a certain amount of time make all of the data available. That's what I mean by credibility*."

(e) Differing approaches from differing companies

Collectively, the offshore E&P and Geo Cos. represent a large industry comprised of hundreds of companies in the U.S. alone. In addition, tens of thousands of service and supply companies also support this industry. Although interests clearly overlap at the broader level, the degree of attention and importance a particular company places on the marine sound issue differs. As one participant stated, "*Companies are all in different places on this issue. Some thought it a big issue. Others thought it was a sort of an emerging issue over the last few years, but have now moved to this is a*

> "*Ten years ago the common attitude was to make the issue go away. Now it's widely seen that there is potential to harm marine mammals either directly, or more likely to result in behavioral changes, and that this creates an unacceptable business risk. That position is not always framed that way but if you probe down within industry that is a widely held belief among the leaders. That was not true ten years ago so to me that's huge progress. That's huge progress."*

big issue. And then some companies were not real concerned with the issue. But in the end, it is really just the big companies that are involved in this issue."

Despite these varying levels of attention, there did appear to be a perception among this group that industry at large no longer has their "*heads in the sand*" on this issue.

(f) Conflicts between E&P and Geo Cos.

The Oil and Gas group can be divided into two sub-groups (E&P and Geo Cos.). The interests across both of these subgroups overlap considerably but not completely. Both sub-groups clearly share a high degree of common interests, such as those depicted with in Figure 2.6 (e.g., predictability, understanding science, honesty, addressing common needs, green practice). However, data also revealed some key differences in the degree of need as shown in Table 2.1. For example, Geo Co. participants expressed a greater emphasis for (1) understanding (regulations, needs of others, how science is used in decision-making, listening); (2) specific aspects of predictability (long-term, prioritized strategy, process delays because of incomplete information, participant consistency, sufficient support); (3) fairness (appropriateness of mitigation, level of concern vs. other issues, inconsistent approach with other unregulated sources or industries, meaningful engagement in regulatory process, $/time spent for compliance); and (4) respect (cordiality, questioning credibility). On the other hand, the only clear difference detected by the data for the E&Ps was that they responded with a higher rate to "excluding others" as a negative tactic.

Table 2.1 Differences in responses between E&P and Geo Cos.

Code	Geo Cos.	E&P
appropriate requirements for situation understand needs of others cordiality level of concern vs other issues	100%	56%
balanced/good enough approach $/time spent for compliance	100%	44%
understand regulatory process long-term, coord., prioritized strategy accountability understand how science used in decision-making slow/delay process b/c incomplete info question credibility look long-term	100%	33%
participant consistency (turnover) more focused, long-term participants listen	100%	22%
sufficient support be pragmatic (compromise) meaningful engagement in reg process	100%	11%
why us? other unregulated sources/industries pressure/work with regulators	100%	0%
exclude others	33%	78%

Some of the differences in the table above may be explained by power inequalities perceived by the Geo Cos. For example, some Geo Co. participants stated, "*we see a very significant effort on the part of the E&P companies to push some of this on the geophysical industry*." In addition to pushing risk, there also appeared to be some level of perception that E&P companies were attempting to control the actions of Geo Cos., at least in regards to regulatory discussions. One Geo Co. participant referenced an effort for a dialogue between Geo Cos. and the government in the early 2000s where it was perceived that the American Petroleum Institute (the lobbying arm of the E&P companies) entered the discussion because "*oil companies actually couldn't see us*

seismic contractors going off as renegade, so they wanted to reign us in and to make sure that, from a policy point of view, we were towing the line."

So, although these two sub-groups share the larger interests and coincide substantially across perceptions of tactics and improved outcomes, there exists inherently intra-group conflict that appears largely centered on perceived power imbalances and unfairness. Such intra-group conflict should be addressed within the larger Oil and Gas grouping in order to increase chances of success for making the marine sound more tractable and predictable.

(g) Environmental role in a for profit company

A number of group participants discussed the challenges of working in the environmental sector of industry. For the most part, these challenges dealt more with garnering attention and support. As one participant stated, "*We now are engaging in making this issue more of a priority for the folks in our companies but there are hundreds of issues that everybody has to manage. Trying to filter up through your company that this is an issue that has the priority that it needs is challenging*." Others spoke more about the challenges of other factions of a company seeing the "*environmental stuff as being a cost and schedule impediment"* and "*that it takes a long time for people to realize how doing it the right way pays dividends long term*." Others noted that "*being a biologist in an oil company is not easy*" because some (but not all) people view you sometimes "*as a barrier to achieving their goals*."

Section 2.08 Shipping

> *"There is no hammer to push the world's major ship-building countries to implement these guidelines. And when I say world's major ship-building, I'm talking about South Korea, Singapore, China. We're still percolating on how we can try and get those countries to agree to implement the voluntary guidelines from IMO during the design phases. It is solely within the discretion of a nation as to whether they wish to make them mandatory."*

Two of the 54 individuals interviewed were classified into the Shipping stakeholder grouping. Eight individuals were contacted from this sector with only two granting interviews. This lack of response from the commercial shipping industry is likely the result of a combination of factors, including: (1) the general lack of focus on the issue from individual companies and (2) the commercial shipping companies lack of familiarity with the researcher. The latter was supported by exceedingly high response rates from other industries where the researcher already had existing relationships; therefore, a lack of prior interaction with commercial shipping companies did appear to limit opportunities for interviews. In addition, of the two shipping entities interviewed both expressed a likely lack of response from shipping companies given the companies' general lack of focus on this topic.

The low sample size for commercial shipping (two individuals) likely biased the results of that group. Consideration was given as to whether or not to include interview data from these two individuals in the data analyses and reporting of results. In the end, it was decided that inclusion of information from these individuals was necessary given the important role commercial shipping plays in the marine mammals and sound issue and that the individuals interviewed were actively engaged on the issue. To help balance

the low sample size, only responses garnering 100% of the group (both members) are captured in the discussion to follow.

Figure 2.7 below summarizes the group's top interests and/or needs, improved outcomes for process, relationship and substance) as well as how they perceive various tactics used over time on this issue (either positively or negatively).

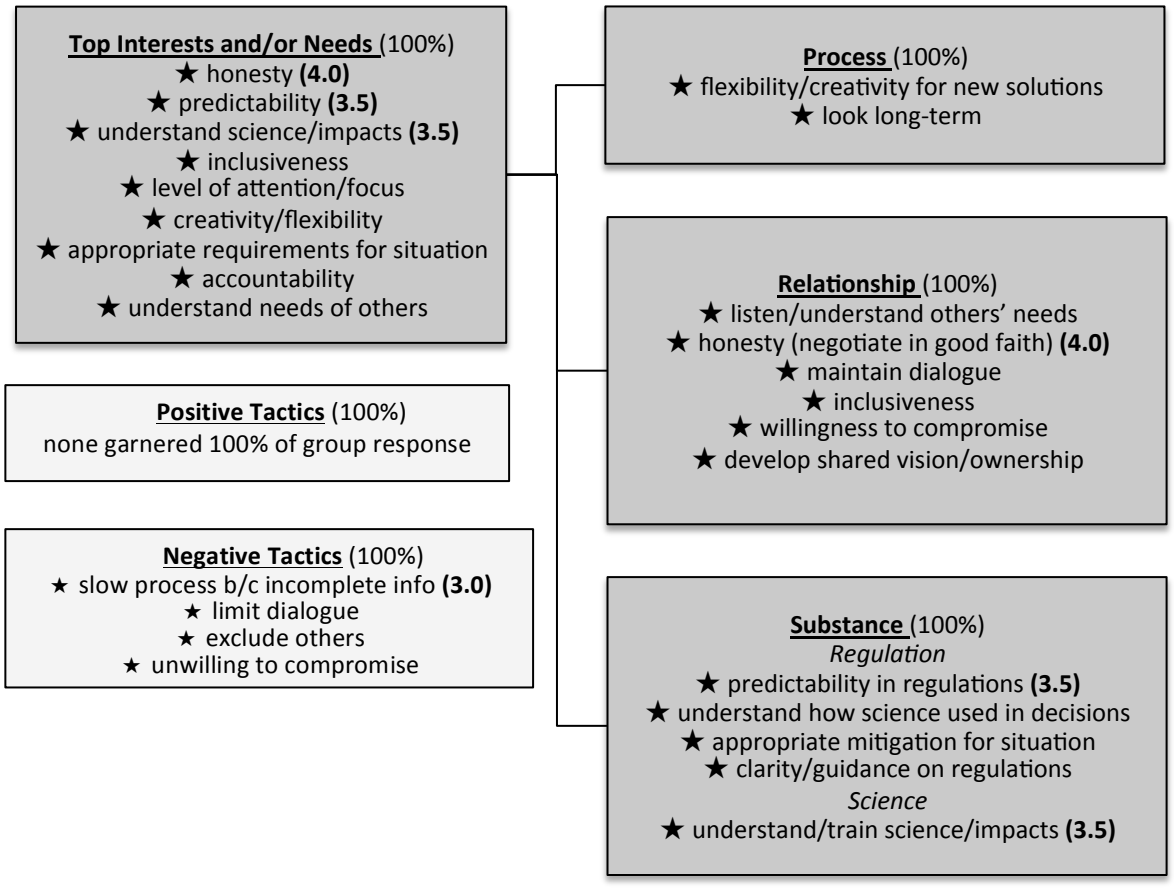


Figure 2.7 Shipping- Summary of participant responses (interests, tactics and recommendations for improved outcomes)

★ indicate 100% of spontaneous response from total group members (given the low sample size of two interviews the bar for importance was set at 100%). Of these, items scored with a weight of ≥3.0 are also noted to identify items raised by large majority of group AND repeatedly emphasized, thus indicating greater importance of item to group.

As with Oil and Gas, to talk in generalities about the identity of the Shipping industry at large is challenging. Further, the sample size for this stakeholder grouping was low. Despite these numbers, data did reveal some areas where participants indicated challenges within and outside the industry that provide useful insight.

Figure 2.7 helps understand particular areas of importance and/or sensitivity for the group. The following discussion then outlines key overarching themes discovered through the data analyses that may be linked to this group's identity and potential areas of intra-group conflict. Any ratings noted in the discussion to follow represent spontaneous responses from the group (expressed in percentages of individuals within group responding).

(a) Great need for predictability

Just like the Oil and Gas group, participants from Shipping rated a need for predictability quite high. It was identified as a top interest by both respondents and scored a weight of 4.0. (Notably, this was less than the 13.3 emphasis placed on predictability by Oil and Gas. This may be due to the low number of participants from Shipping or perhaps given Oil and Gas face litigation risk, and the great unpredictability it brings with it, whereas Shipping companies do not.) As with Oil and Gas, there is clearly great potential for making the marine sound issue more tractable for this group if the level of predictability (mainly in regulations and requirements) can be enhanced.

(b) Shippers vs. ship builders

In April 2014, the IMO passed *Guidelines for the Reduction of Underwater Noise from Commercial Shipping to Address Adverse Impacts on Marine Life* (IMO, 2014).

The passage of these guidelines followed a six-year effort by a collaboration of government, scientists, eNGOs, and forward-thinking sectors of the shipping industry. These guidelines aim to:

- recognize that shipping noise can have short-term and long-term impacts on marine life
- call for measurement of shipping noise according to objective ISO standards, which are themselves on the verge of adoption
- identify computational models for determining effective quieting measures
- provide guidance for designing quieter ships and for reducing noise from existing ships, especially from propeller cavitation
- advise owners and operators on how to minimize noise through ship operations and maintenance, such as by polishing ship propellers to remove fouling and surface roughness.

What is yet unclear is the effect the voluntary guidelines will have on industry as a whole. Part of this effort will undoubtedly include raising awareness among companies and encouraging them to step forward and embrace the guidelines as standard practice. As one participant stated, "*We just need to improve the communication and get the message to all the relevant people. But the people that we have spoken to have generally accepted it and thought it was a good idea as long as it does not cost too much money to go with it.*"

There is, however, a significant challenge in the structural organization within the shipping industry in that the shipping companies are different than the ship builders. It

is at the ship building stage that these quieting guidelines are aimed and not retrofitting existing ships. Very few shipping companies have sections that build their own ships. Instead, most companies 'buy off the lot' from external, independent ship building companies, many out of South Korea, Singapore and China. So, in order to implement these guidelines, either the ship building companies need to voluntarily incorporate these guidelines into their ship designs or the shipping industry needs to commission ship builders to do so. These two factions of the industry, shippers and ship builders, are largely separated and do not share a common trade organization. One participant stated, "*I don't think China and South Korea are going to sit down any time soon at this table. But, if you can get those people involved you can really get a good cut of the problems*." Clearly, addressing how to engage ship builders into the discussion will increase the probability of successful implementation of the IMO guidelines.

(c) Mixed involvement within industry

The recent passage of the IMO guidelines acknowledges shipping noise as leading to short- and long-term impacts to marine life. So, it appears that the Shipping industry at large acknowledges the issue, but it is less clear how involved individual companies are in pursuing and implementing solutions.

"I have dealt with a number of stakeholder groups on underwater noise and on the concern about whale strikes. In some ways, it almost is a bit confusing because one group is saying we want you to be quieter, but the other group says we do not want you to hit the whales. So it is a question, sometimes I think just tell me what the best practice is or what is being done to discuss the best practice."

(d) Competing environmental issues

One participant noted that this perceived lack of involvement by individual companies might partly be due

to competing environmental issues, such as ship strikes or air pollution. These issues have garnered more rulemaking and attention than marine sound. There may also be confusion among companies about how measures to make ships quieter affect the whale strike issue. This indicates a possible need to provide some clarity on how shipping companies should reconcile recommendations for quieting with those of avoiding vessel strikes of whales.

(e) No hammer to push solution

The other producer groups studied in this project (Navy, Oil and Gas, Academic (Geo)) all are regulated for sound issues within the U.S. under the MMPA and ESA, but there is no clear regulatory hook for Shipping. This also means there is no ability for litigating under these statutes. This creates a different 'pressure' environment for Shipping than what is seen for the other producers. It also leads to different tactics from eNGOs and government on dealing with ship noise issues where collaboration may be the best option to push for change (and perhaps only option other than media and lobbying efforts). This may largely be the reason why there has been more of a collaborative effort by eNGOs and government to work with Shipping to pursue the IMO quieting guidelines. This may also be explained by many comments from participants of other groups on the influence of one Shipping individual in particular whose highly collaborative and personable nature is viewed as being instrumental in maintaining a lower level of conflict for Shipping on the marine sound issue.

(f) Separate intentional vs. unintentional sound

There was a clear recommendation from one participant to separate discussions and paths forward for intentional and unintentional sound. This did not appear to be an effort to minimize pressure on Shipping but rather a perception that the types of sound should remain separate so that issues with intentional noise do not overshadow solutions for unintentional noise. One respondent stated, "*I think it is a mistake to lump unintentional and intentional together. Because the Navy and E&P, they're going to stand their ground. They need to introduce noise to the marine environment."* For Shipping, participants stated that producing noise is unnecessary for operations and an easier solution— simply pursue quieting.

CONCLUSIONS

Identity is a fundamental human need and a key issue in many intractable environmental problems. Threats to a group's identity, or to their underlying interests and/or needs, may elicit protective but aggressive tactics and responses that can further increase conflict, alter perceptions and thus continue the cycle of intractability.

This chapter described self-perceived identities of seven key stakeholder groups and where identity may generate intra-group conflict (i.e., when members of a group conflict with one another). Appendix E provides an interesting comparison of how groups view themselves versus how other groups perceive them and which groups are perceived to hold the most influence. Table 2.2 summarizes the areas of key group identity and intra-group conflict identified from the interview data.

Table 2.2 Summary of themes on group identity and intra-group conflicts

Academic (impact)	Desire to reduce scientific uncertainty Desire to have regulations better informed by science Not holding back in order to maintain research funding Protecting professional credibility and sticking to positions Adversity to exaggerations of information Perceived bias (by some) on taking funding from sound producers Can I be a scientist and an advocate?
Academic (geo)	Need to promote value of science produced Desire to disassociate from oil and gas Concerns regulatory process will stop scientific progress Many group members still naïve about marine sound issue
eNGO	Level the playing field (power imbalance) Increasing power through public campaigns Differing end goals among group member organizations Other groups do not listen and assume all eNGOs are radical Gladiator vs compromiser Competition for membership and public attention The one leader approach
Government (federal)	Battling public perceptions and building a better process Power imbalances among agencies Desire to be more proactive and find balance Differing relationships among agencies Challenges within your own agency Challenges with openness in public situations
Navy (U.S.)	Have made progress Unfairly characterized by eNGOs despite progress Need to change costly and timely compliance process Need to control the message
Oil and Gas	Great need for predictability Culture of problemo solving Desire to better understand (both science and regulations) Need for respect and credibility Differing levels of attention across companies Conflicts between E&P and Geo Cos Environmental role in a for profit company
Shipping	Great need for predictability Shippers vs. ship builders Mixed involvement within industry Competing environmental issues No hammer to push solution Separate intentional vs. unintentional sound

It is important in any future collaborative effort to raise awareness among the groups about how each group identifies themselves, including fundamental needs, what is most important to them on the marine sound issue, and where they see potential outcomes and solutions. It is also key to understand which tactics each group perceives as positive and negative.

This chapter focuses on group identity and intra-group conflict and how conflict at these levels increases the intractability of an issue given group members align to protect against threats to their group. They are then less likely to operate at the individual level and will act much more aggressively or competitively when their group is being attacked. At the same time, the other 'attacking' group no longer sees individuals on the other side, but only the group, and makes prejudicial assumptions about how all members of the group will behave. The value here of a transformative approach is it brings the focus away from the group and back down to the individual level where there is a greater ability to *actively* listen to each other and understand the underlying interests behind the public positions. This can then promote more of a willingness to work together, space for creative problem-solving and shared experiences of identify as a collective group working together over time to solve what was once thought of as unsolvable.

Chapter 3
Inter-Group Conflict

The issue of marine sound has been shown to be a truly Wicked Environmental Problem WEP characterized by high levels of scientific uncertainty on risks, intermingling political/regulatory complexities, regularly evolving ecological and social environments, and diverse stakeholder values and viewpoints. Because of the history and the relationships between major actors, much of the conflict surrounding marine sound now lies at the identity level (Lewandowski*, in press*). This occurs as conflict on an issue increases and individuals become segmented into groups that align with their individual values. Each group then develops separate approaches to improve the situation from their point of view. Based on the group's experiences, each group starts making assumptions and holding prejudices about others based on their group affiliation. These prejudices lead to avoidance of working together that, in turn, inhibits collaborating toward a common vision of improving outcomes for all. This in turn makes resolving conflict even more challenging given the assuming person has little to no hope that an individual from another group will act or think differently than expected (Madden and McQuinn, 2014). The issue only becomes 'more wicked.'

Chapter 1 described why the marine mammals and sound issue is wicked and provided an overview of the identity level conflict plaguing this issue. Chapter 2 took a detailed look into the group identify, with an emphasis on how each group identifies themselves and elements of *intra*-group conflict that may make resolution on more challenging (i.e., when members within a group conflict with one another or identity or rules of a group limit flexibility for creative solutions). This chapter now looks at the *inter*-group conflict (e.g., conflict between separate groups) through a comparison of group interests, tactics perceived as positive or negative and improved outcomes).

METHODS

A case study methodology was undertaken to research aspects of the marine mammal and sound issue that are routed firmly in identity conflict. It used several data collection techniques, including a document review and analysis of 230 publications, semi-structured interviews with 54 stakeholders and participant review of selected analyses. By combining several techniques, data were triangulated so that the theories, questions and analyses were tested from multiple facets thus adding rigor to the results (Patton, 1990; Yin, 2003). Data were "openly coded" using categorizing strategies and memoing to capture connections (Glaser and Strauss, 1967). The Conflict Satisfaction Triangle was also applied to ascertain the role of relationship versus process and substance in the conflict surrounding the marine sound issue (Moore, 2003; Furlong, 2005). Further, informal interviews were conducted with collaborative action experts. Appendix A provides more detail on the methodologies used.

RESULTS and DISCUSSION

Conflict highlights the differences between people and positions and not the similarities. It changes relationships in predictable ways, altering communication patterns, social organization, images of self and others (Rupesinghe, 1994; Kriesberg, 1998; Botes, 2003). Decision-making processes cannot produce effective solutions in situations where conflicting goals, identities and values predominate (Moote and McClaran, 1997; Conley and Moote, 2003; Madden and McQuinn, 2014). Addressing conflict is the most important action to take to reach workable and sustainable solutions. It is also the most difficult to implement.

On the issue of marine sound and marine mammals, stakeholders have been engaged in varying levels and degrees of conflict since the early 1990s. Although there are examples of where good relationships have been built, even between opposing parties, the overall status of relationships among stakeholders has not been strong or pervasive enough to overcome the inertia of conflict. (Appendix E shows how each stakeholder group views itself and compares this to how other groups view them. It also provides a snapshot of which groups are perceived as most influential on this issue.)

Conflict transformation theory finds that participants must first understand (not agree with but at least understand) the needs and perspectives of others before true communication and progress can take place on this issue (Dukes, 1999; Lederach, 2003; Bush and Folger, 2004, Madden and McQuinn, 2014). Understanding means getting past positions (what" is wanted) to the underlying interests ("why" it is needed).

This research theorized that the contextual reasoning underlying the conflict is yet to be fully investigated and then understood by all parties, and this is why the conflict has become and remains intractable. Such a contextual understanding can only be achieved through a rigorous qualitative study where results must be used to inform the basis of a collaborative process that increases understanding among groups, builds group capacity to problem-solve and ultimately transforms conflict into effective action.

The information to follow provides results from the 54 stakeholder interviews, compares these results across groups and identifies where there are important commonalities and differences. Results indicate what is most important to each group, thus providing valuable information on where group 'needs' may exist. (Again, needs are essential to the group and non-negotiable. Interests are negotiable.) These findings, along with those presented in Chapter 2, can then be used to allow all participants to gain a greater contextual understanding of each other and also serve as the basis for what topics and approaches are needed in any future collaborative, transformative effort. In addition, Appendix C contains the codebook used for the interview data, including all the ideas for improved outcomes captured during the interviews (identified specifically under the collaboration section of the codebook).

Section 3.01 Positions, Interests and/or Needs

> "*Your position is something you have decided upon. Your interests are what caused you to so decide*." (Fisher et al. 1991, page 41)

Positions are pre-determined outcomes that are publicly stated and demanded. They advocate rather than inquire. Positions are harder lines drawn in the sand, succinct narratives that once out and repeated become harder and harder to take back. They become tied to a person's credibility. Changing a position can then be interpreted as giving in, losing, being indecisive or even not credible (Fisher et al., 1991; Dukes, 1993; Provis, 1996). It is no wonder then that positions need to be protected and defended, even when they start making less sense.

Interests are then the "why" behind a stated position. They reflect not only what is important as an outcome but also the reasons why they are important. Interests lie underneath what we say we want – and reveal our hopes, needs, values, beliefs and expectations. Some interests are fundamental "must haves" for an individual and cannot be compromised. These are called "needs." It is, therefore, essential to determine which interests are fundamental needs and which may be negotiable (Fisher et al., 1991; Dukes, 1993; Provis, 1996).

Figures 2.1-2.7 in Chapter 2 summarize the top interests and/or needs, improved outcomes and perceptions (positive and negative) of tactics of each of the seven stakeholder groups. Chapter 2 also provides themes apparent in the data for each of these groups that help understand particular areas of importance and/or sensitivity.

Table 3.1 to follow then provides a comparative look at the top interests and/or needs of each of the stakeholder groupings. Shaded areas show top interests and/or needs identified by at least 50% of the group (except for Shipping where only 100% response rates were used). "No. Groups" indicates how many of the seven groups designated a high level of importance to a particular interest and/or need. Of the groups indicating importance, "Rating" then aims to apply a quantitative measure to the level of importance across groups. This was achieved by assigning a points system where interests and/or needs ranking highest in a group received more points than those ranking slightly lower (i.e., 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Interests and/or needs with higher "No. Groups" and "Rating" indicate areas for greatest potential of common interests and/or needs. The same approach applies to the discussion of tactics and improved outcomes later in this chapter.

Table 3.1 Top interests and/or needs by stakeholder group

Interest # participants sample size	Academic Impact 7	Academic Geo 3	eNGO 8	Gov't Federal 14	Navy U.S. 7	Oil and Gas 12	Shipping 2	No. Groups	Rating
Honesty	**1** 71%	 0%	**1** 100%	**1** 86%	**1** 100%	**3** 83%	**1** 100%	**6**	**28** 77%
Understand science/impacts	**1** 71%	**1** 100%	**3** 75%	**3** 71%	**3** 63%	**2** 92%	**1** 100%	**7**	**28** 82%
Address mutual needs	**2** 57%	**1** 100%	**3** 75%	**4** 64%	**3** 63%	**3** 83%	 50%	**6**	**20** 70%
Understand needs of others	 29%	**2** 67%	**3** 75%	**4** 64%	**2** 88%	**5** 67%	**1** 100%	**6**	**19** 70%
Accountability	**1** 71%	**2** 67%	**1** 100%	**2** 79%	**3** 63%	**7** 50%	**1** 100%	**7**	**26** 76%
Cordiality	**1** 71%	 33%	**5** 38%	 43%	**3** 63%	**5** 67%	 0%	**4**	**10** 45%
Environmentalism (protect enviro)	 43%	 0%	**2** 88%	**5** 50%	**4** 50%	 25%	 50%	**3**	**7** 44%
Environmentalism (green practice)	**1** 71%	 0%	**4** 63%	**5** 50%	**3** 63%	**3** 83%	 50%	**5**	**14** 54%
Balanced/good enough approach	 29%	**1** 100%	**4** 63%	**2** 79%	**4** 50%	**6** 58%	 50%	**5**	**13** 61%
Access/share information	**2** 57%	**2** 67%	**5** 50%	**3** 71%	 38%	**6** 58%	 0%	**5**	**12** 49%
Raise awareness of own needs	 29%	**2** 67%	**2** 88%	 36%	**3** 63%	**6** 58%	 0%	**4**	**11** 49%
Creativity/flexibility for new solutions	 0%	 0%	 13%	 29%	**3** 63%	**5** 67%	**1** 100%	**3**	**9** 39%
Sufficient support	**2** 57%	 33%	 38%	**4** 64%	**3** 63%	 33%	 0%	**3**	**9** 41%
Predictability	 43%	**1** 100%	**4** 63%	 29%	**2** 88%	**1** 100%	**1** 100%	**5**	**21** 75%

(a) Honesty

Honesty is defined by Merriam-Webster as "fairness and straightforwardness of conduct; adherence to the fact." A majority of participants (77%) cited underlying needs for honesty. This interest ranked as a top interest for six groups, including a number one ranking for five of these groups. Honesty was most often expressed as "*negotiating in good faith*" and "*being honest about the end game*." It also included transparency and openness about organizational activities. The interview data clearly demonstrate the high value all groups place on honesty, the need for an increased belief that honesty is occurring and that most groups believe at least some others are being dishonest although to varying degrees depending on the existing conflict and past experiences between specific groups.

Notably, honesty was not raised during the Academic (Geo) interviews. This may be given that the sample size was too low (although so are the number of group members engaged on this issue). It may also have been that recent disputes between Academic (Geos) and eNGOs and Government, of which the Academic (Geos) were still clearly feeling the effects, created more of an emphasis from this group on other interests (e.g., understanding needs of others, addressing mutual needs, raise awareness of own needs, balanced/good enough approach). There was no indication that Academic (Geos) felt honesty was unimportant.

A need for honesty is not surprising nor is its direct linkage to trust (Ashton et al., 2007). Interpersonal relationships are facilitated by the belief that the other person has a moral commitment to honesty or has an incentive to tell the truth (Fehr and Gächter,

2000). If you cannot believe someone is being honest with you then you cannot trust them. Once trust is lost or perceived as lost, it becomes an obstacle to even looking for common ground much less getting to a place of compromise. Relationships become more adversarial, with the thought of winning overcoming possibilities of collaborating (Nie, 2003). As one participant stated, "…*when you have lost your trust and your faith in somebody, then it is hard to say, Yeah, I will sit down at a table with you and deal.*"

The good news is that honesty appears to beget honesty. People will reinforce others when being honest. This positive reinforcement leads to more actions of honesty (Fehr and Gächter, 2000; Wang et al., 2009). In other words, honesty becomes self-reinforcing and grows. Improving a sense of honesty among stakeholders is, therefore, an essential element to transforming conflict. There needs to be an emphasis in any collaborative effort on increasing a sense of honesty among participants.

(b) Understand science

Understand, in this context, is defined by Merriam-Webster as "to know how something works or happens." All groups ranked this as a top three interest with at least 82% of overall participant response. Here, the need for better understanding of science and impacts was expressed in different contexts: (1) scientific uncertainty on effects (2) perceptions that others do not adequately understand the science; (3) perceptions that some others only

"Just base everything on a hard science to the extent possible."

"Science is certainly going to help provide the answers to key questions that are needed to be able to manage, to be able to regulate anthropogenic sources in the ocean. At the same time I have no doubt the science is going to horribly complicate the issue."

used science that supported their interest (relating back to trust); and (4) an expressed desire by members of the Oil and Gas industry to train all participants to understand the science and by the Academic Geos to also train participants on the sound-producing technology. As one participant stated, *"Everybody needs to get real training. We have far too many people along in this discussion that really don't have a clue what they're talking about. That is very, very frustrating."*

Scientific uncertainty has been widely identified as an essential element or driver of wicked environmental problems (Yaffee, 1997; Ludwig et al., 2001; Kreuter et al., 2004; Balint et al., 2011). Although many participants noted progress in research, especially in terms of better understanding injury, the remaining uncertainty was largely perceived as high and the need to lessen uncertainty as paramount.

At the same time, over half of the participants also discussed whether science could "tame" this issue. With a few exceptions, most noted that "*science can never get you all the way there*" and that "*the more science that we have it almost seems like the more questions that we have*." So, there is a need to reconcile and align expectations on how science can or cannot make this issue more tractable.

> "*Confront uncertainty. Once we free ourselves from the illusion that science or technology, if lavishly funded, can provide a solution to a resource or conservation problem, appropriate actions becomes possible."* (Ludwig et al., 1993)

(c) Accountability

Accountability is defined by Merriam-Webster as "an obligation or willingness to accept responsibility or to account for one's actions." Accountability entails not only being held accountable, either by oneself or others, but also the perception that the appropriate level of accountability is being admitted or applied (Greiling and Spraul, 2010). Participants largely emphasized the need to make others accountable for their actions and reinforced positively examples where they felt this had occurred (i.e., reinforcing honesty).

Six of the groups ranked accountability as a top five interest (76% participants across groups). Accountability was expressed in various ways. For example, eNGOs viewed their role on the issue as making other groups accountable for their actions, a view that was also shared largely by other stakeholder groupings. As one Navy participant stated in reference to the role of eNGOs in accountability, "*You need people there to make sure that the government wears the white hat because the government needs to wear the white hat. There's value in that*." Many also felt the Government had an important role in making sound producers accountable through its decision-making authority. This was also expressed by several Government group members.

Academic (Impacts) described a perceived need for Oil and Gas, Shipping and Academic (Geos) to engage more in the issue as a means to demonstrate accountability. In this sense, accountability was expressed as an entity recognizing its role in the issue, acknowledging potential for impacts and then taking actions to minimize potential effects. Some Academic (Impacts) felt an appropriate level of accountability had not yet

been reached with these groups. As one Academic (Impact) group member stated, "*I think the one that is notable from how little they have been involved and how little attention publicly they have gotten is the shipping industry… for the single largest contributor of noise into the ocean to be barely engaged and not regulated is pretty striking*." Another group member stated, "*The oil companies basically have been given a green light so far. They really need to step up to the plate much along the lines of what the Navy's done to figure out what the impacts are."* And another stated that they "*haven't been wildly impressed yet with the academic contributions* [meaning Academic (Geos)] *or even for that matter frankly was a little frustrated with NSF because I thought they were dragging their feet on a lot of things...*"

From another perspective, Oil and Gas, Shipping, Academic (Geos) and even some Academic (Impacts) expressed accountability as a need for eNGOs to take responsibility for tactics eNGOs use that are perceived as spreading inaccurate information or unfairly portraying sound or sound producers. (This also relates to a interest for respect and honesty.) As one Academic (Impact) stated, "*I get the literature from eNGOs about Navy sonar destroying animals. I said wait a minute! I had a discussion with the top lawyers from your organization. We had a very good discussion. You acknowledged that this is not the issue. And when I confront them, they say that's a different part of the*

> "*We do not want to be seen as purposefully injuring animals. Nobody wants that. We want to be seen as doing what we need to do in a very responsible manner. Unfortunately, the publicity is not built that way. When we see things in newspapers about bleeding lungs and busted eardrums, past devastation left behind our vessels. I mean, just the image of them is almost impossible to overcome with any sort of rational discussion*."

organization, and I don't have any control over it. I think- really?" One Oil and Gas participant stated, "*Several times in his blog he says that seismic surveys are a gateway drug to offshore drilling. That's what it gets down to I believe. Yes, we make very loud sounds and we make some of the loudest human sounds out there, but when you look no further than what's floating around out there to try to influence public opinion and get out the fundraisers, there's nothing honest about the way our operations are differenced. They know better than that. So therefore, how can anyone conclude anything but, that the end justifies the means?"*

A small portion of Government also remarked about their perceptions of how some eNGOs intentionally spreading inaccurate and unfair information to gain public attention and increase membership. However, Government did not link these perceived tactics to a need for eNGOs to be more accountable for these tactics.

(d) Address mutual needs

Six groups identified addressing mutual needs as a top five interest (70% of participants responding). In this context, responses were focused heavily on a desire for collaboration.

Efforts to collaborate can change the course of a conflict. Social capital theory, for example, demonstrates that collaborations are essentially social organizations or learning networks. Over time, these social organizations or networks promote trust that moves participants toward coordination and cooperation for mutual benefit. Processes are developed by these social organizations and learning networks that allow parties to collaboratively deliberate on complex decisions and iteratively move toward an adaptive

solution (NRC, 2006; Balint et al., 2011). With these networks come diversity, independence and authentic dialogue. Members of the network share in the flow of power. What results is a network more capable of learning and adapting to change (Daniels and Walker, 1996; Booher and Innes, 2002; Zhang and Dawes, 2006; Blackstock et al., 2007). This desire for collaboration, however, is likely being overshadowed by the influence of the existing inter-group conflict.

(e) Predictability

Predictability is defined by Merriam-Webster as to "say that something will or might happen in the future" or "to declare or indicate in advance; *especially* foretell on the basis of observation, experience, or scientific reason." The marine sound issue, given its depth and length of identity conflict, is riddled with unpredictability. Sound producers cannot be sure whether their activities will be approved in a timely manner and if they will be stopped in litigation at the last minute. eNGOs cannot know what the future will hold for environmental protection. Government cannot predict political influences or timelines. Academic (Impacts) cannot predict whether funding will continue or if the results of their work will be used effectively in decision-making.

Overall, 75% of participants noted predictability as a top interest. Academic (Geos), Oil and Gas and Shipping ranked predictability as their top interest. Navy and eNGOs also ranked as a top five. Clearly, predictability is extremely important to these groups and any progress toward increasing predictability will help substantially alleviate the conflict.

Although Academic (Impact) and Government did not indicate predictability as a top interest and/or needs, there was evidence they recognized the importance of predictability to the sound producers. As one participant from these groups put it, "*it is dangerous because people do not know what to expect*." Another stated, "*where I have the most sympathy with user groups is when they say, "Look, just give us the rules, just give us something that we can count on that is predictable." Industries and companies hate unpredictability. I hate unpredictability. You cannot plan your future. Just give us something we can stick to, know that we will not get sued with this, and we are happy. So, I think even sometimes they could tolerate stricter environment rules, if people just stuck to them, and they would have some security*."

(f) Understand needs and perspectives of others

This interest was identified as a top five by all groups except for Academic (Impacts). Overall, it garnered a response from 70% of participants. Among those ranking it high, there was a clear perception of a need to get "*all the cards on the table*" or "*concretely come forward and say what you want*." Interestingly, but not surprisingly, those who had been engaged longer on the issue and actively sought relationship building on all sides, as evidenced in the importance and emphasis placed in their interview on developing relationships, felt they did understand the needs and perspectives of others. However, these individuals appeared to be in the minority with more participants expressing frustration with not truly understanding what the other side wanted.

Further, even when there was some level of understanding, it was often perceived as insufficient. For example, while a sound producer may understand that an

environmentalist wants to protect marine mammals, a producer may express frustration with understanding what the environmentalist truly wants e.g., what needs to happen to get to a workable solution. A future collaborative effort would benefit greatly from more openness among stakeholders about what they truly need (interests) versus what they want (positions).

(g) Environmentalism (green practice)

Environmentalism is defined by Merriam-Webster as "advocacy of the preservation, restoration, or improvement of the natural environment." In terms of this interest, it largely encompassed protection of marine mammals and the habitat during the operation of anthropogenic activities. It was included as a top five interest for five of the groups (all except for Academic (Geo) and Shipping). Respondents were largely very interested in accepting, promoting and using means to reduce environmental impact. As one Oil and Gas respondent stated, "…*ultimately we are all floating around on this same ball in space. And, anybody who stops to think about it for a moment knows we all need to be responsible, whether we are corporations or organizations or individuals. And, so I think there is a common goal there. If you get right down to basics that we need to sustain certain environments to keep our organizations going*." The challenge, of course, is to define the balance.

(h) Balanced/good enough approach

In the context of this research, this was ranked as a top six interest by five of the groups, all except for Academic (Impacts) and Shipping. The desire for effectiveness and efficiency was expressed in terms of finding a balanced or good enough approach.

Participants noted a need for more of an "*engineering approached focused on reaching a good enough solution.*" Others felt a strong imbalance between money and time spent on the process (e.g., permitting versus the controls to protect against impacts).

> "*Let's have an approach that makes sense and is more efficient and effective at protecting marine mammals and endangered species. We can do that without being on this long, expensive roller coaster*."

One key finding from sound producers, and even some Academic (Impacts) and Government, was a sense that eNGOs were not looking for a balanced approach and instead were largely focused on stopping a larger activity (discussed later in the chapter). However, several eNGO participants noted that there is a range among eNGOs with some more willing to seek a balanced approach than others. Further, they commented on instances where the other side assumed they were not seeking balance even though that was, in fact, the intended outcome. There is clearly a need for more dialogue between groups here to more clearly understand, listen and distinguish where there are possibilities for balance and where there are not.

(i) Interest of financial security

> "*There are financial interests all around this topic. Almost every stakeholder group has their own interest*."

There was a recurring theme among participants about the role and influence of money. In fact, 55 of the 54 interviewees (response rate of 95%) commented on this topic. Financial security crossed many user groups, with the exception of the Navy and Government, at least insofar as the responses received. There were the notions of businesses being out to make money (e.g., oil and gas companies, geophysical companies, commercial shipping companies), but the need for

financial security, and perspectives on its influence, was clearly broader. Respondents noted the need for Academic (Impacts) to maintain funding. University graduate programs now exist with degrees specific to marine sound issues and therefore a dependency on the issue remaining pertinent. eNGOs exist through membership and the need to fundraise to remain active on the marine sound and other environmental issues. There are individuals across all the stakeholder groups that focus either solely or primarily on marine sound issues, so job security may also be at hand. The influence of money even indirectly affected the Navy and Government, partly in their role of funders for research.

Although this research was not intended to study the economic aspects of the marine sound issue, it is clear there is a strong perception among many interviewees that "*money trumps everything*." Some even went so far as to suggest "*there are some people in the room who have invested interest in making the process as complicated as possible because that's their livelihood*" meaning if the issue goes away then so does the money. At the same time, others noted that there were plenty of other environmental issues and plenty of other work to do should marine sound ever come to resolution. Either way, this is a topic that should be openly addressed during any collaborative effort as a means to have a frank discussion on its true influence and dispel any misconceptions if they exist.

Section 3.02 Tactics

During conflict, groups can react strongly when they feel their sense of group is threatened or denied legitimacy or respect. Such perceptions of unfairness and unjustness can then prompt compensatory behavior to protect or enhance one's group membership or the group reputation (Skitka, 2003; Tyler and Blader, 2003; Martinson et al., 2006). This response can be both aggressive and defensive and can escalate quickly into an ongoing cycle of intractable conflict (Fiol et al., 2009). What results is a public and competitive atmosphere where groups turn to competing information campaigns, often based on reacting to or predicting moves of the other group, using information that best supports their position and least supports the position of the other group. Both sides claim compromise, hold that science favors their position and imply morality and the common good as guiding principles (e.g., protect the environment for generations to come, protect the economy for generations to come). Images and slogans are used as well as lobbying and litigating (Rowley and Moldoveanu, 2003; Fiol et al., 2009). The goal is to communicate with the public and political decision-makers. It is competition on who can win the larger public battle.

A "tactic" is an action or method that is planned and used to achieve a particular goal (e.g., public campaigns to raise awareness, meeting with regulators to share concerns, litigating to get parties to the table). Tactics affect the course of the conflict and are often reciprocated. Patterns of competitive tactics will escalate conflict. Collaborative tactics are needed to preserve a relationship through conflict, and are more likely to lead to productive conflict management (Hocker and Wilmot, 1985).

Figures 2.1-2.7 in Chapter 2 summarize the top interests and/or needs, improved outcomes and perceptions of tactics (positive and negative) of each of the seven stakeholder groups. Chapter 2 also provides themes apparent in the data for each of these groups that help understand particular areas of importance and/or sensitivity and where potential for conflict as well as solutions may be found.

Interview data identified 61 different tactics. Of these, 32 were considered by participants as positive and 29 were seen as negative. Tables 3.2 -3.3 to follow then provide a comparative look at the top tactics perceived as positive per each stakeholder group. Shaded areas show top tactics identified by at least 50% of the group (except for Shipping where only 100% response rates were used). "No. Groups" indicates how many of the seven groups designated a high level of importance to a particular tactic. Of the groups indicating importance, "Rating" then aims to apply a quantitative measure to the level of importance across groups (again through points system with 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Tactics with higher "No. Groups" and "Rating" indicate areas for greatest potential of "positive" collaborative tactics (i.e., reduce conflict) or "negative" competitive tactics (i.e., increase conflict).

Table 3.2 Top positive tactics by stakeholder group

Interest # participants sample size	Academic Impact 7	Academic Geo 3	eNGO 8	Gov't Federal 14	Navy U.S. 7	Oil and Gas 12	Shipping 2	**No. Groups**	**Rating**
Collaborate	29%	33%	**3** 75%	**2** 64%	**1** 75%	**1** 67%	50%	**4**	**17** 56%
Maintain dialogue	29%	0%	**2** 88%	**1** 71%	38%	**1** 67%	50%	**3**	**14** 49%
Build stronger relationships	**1** 43%	33%	**4** 63%	21%	**2** 63%	**2** 58%	0%	**4**	**15** 40%
Pressure/work with regulators	29%	33%	**2** 88%	**2** 64%	25%	25%	0%	**2**	**8** 38%
Respectful to opposition	14%	0%	**4** 63%	36%	38%	**3** 50%	50%	**2**	**5** 36%
Acknowledge role in problem	**1** 43%	0%	**5** 50%	43%	38%	42%	50%	**2**	**6** 38%
Listen	29%	33%	**4** 63%	36%	13%	42%	50%	**1**	**2** 38%
Be pragmatic compromise	29%	**1** 67%	38%	36%	25%	33%	50%	**1**	**5** 40%
Honesty negotiate in good faith	14%	33%	**1** 100%	29%	13%	25%	0%	**1**	**5** 31%
Mutual learning	29%	33%	25%	0%	25%	**3** 50%	50%	**1**	**3** 30%
Share data/info	14%	33%	13%	**3** 50%	0%	33%	0%	**1**	**3** 20%
Change regs so more efficient	29%	33%	13%	29%	**3** 50%	8%	0%	**1**	**3** 20%
Educate thru public/stakeholder outreach	29%	0%	**4** 63%	14%	**2** 63%	17%	0%	**2**	**6** 27%

(a) Positive tactics

Collaborative tactics are needed to preserve a relationship through conflict, and are more likely to lead to productive conflict management (Hocker and Wilmot, 1985). Of the 61 different tactics identified during the research, 32 were considered positive by participants. The top ranking positive tactics included collaborate, maintain dialogue and build relationships.

Collaborate

Collaboration is defined as "a process in which autonomous actors interact through formal and informal negotiation, jointly creating rules and structures governing their relationships and ways to act or decide on the issues that brought them together; it is a process involving shared norms and mutually beneficial interactions" (Thomson et al., 2007). Gray (1989) describes collaboration as representing a longer-term integrated process "through which parties who see different aspects of a problem ... constructively explore their differences . . . search for solutions that go beyond their own limited vision of what is possible and implement those solutions jointly."

Collaboration ranked as a top five tactic for eNGO, Government, Navy, and Oil and Gas. While Academic (Geos) ranked 'address mutual needs' as a top interest, this did not translate into any ranking for collaboration as a positive tactic. This may be for two reasons. First, the sample size was lower. Second, all Academic (Geos) interviewed expressed frustration with recent attempts at collaboration. As one stated, "*So at every stage we would meet the criteria that they wanted. Then that would shift and then additional things would be added on. We would meet those, and they would shift again.*

So it is like there was never any intention of trying to let it go forward. It was a definite conclusion that no matter what we did in that scenario, obviously even when we met everything, they were still opposed to the project and made it clear publicly that they were against it."

Part of the issue here may have been that these experiences were not true collaborations but rather perceived by at least one party as conceding while the other continually demands. Rather, true collaborative efforts seek to discover shared interests and opportunities for mutual gain (i.e., a win/win situation). It is developing the communication space to see past the positions to the interests. Importantly, it does not require any party to concede on key needs but rather use creative problem-solving to the satisfaction of all parties involved.

Maintain dialogue

Maintaining dialogue was rated highly overall. This is unsurprising given the importance of building and maintaining communication space for any issue, but especially those steeped in conflict. It rated as a top five positive tactic for eNGO, Government, and Oil and Gas. Maintaining dialogue was noted as a means for taming tractability. One participant stated, "*At the start of the process, there was a lot of venom, a lot of animosity among the groups that was just really people coming in with hurt feelings and presumptions of them being wrong. At the committee meetings, and through the time that was allocated to letting folks vent, there was the ability see where maybe the justification did not substantiate something or did*." Maintaining dialogue did not rank

for Academic (Impact), Academic (Geo) or Navy. Data did not reveal any information that would explain why this was chosen by some groups and not others.

Build stronger relationships

As with maintaining dialogue, building stronger relationships is key to collaborating, promoting honesty and trust and problem-solving. This tactic ranked as a top five for Academic (Impact), eNGO, Navy and Oil and Gas. One participant stated, "*With this particular problem and where we sit today, it seems to me that this relationship thing is what we could mine and where we could get some forward motion*." Another expressed, "*if both sides had the opportunity to get to know the individual and build that relationship, I think it is a lot harder to be that nasty*." Finally, another expressed the important role of relationship in the current conflict- "…*Until those relationships are improved we are not going to get to improved outcomes because they are never going to buy into the process or the substance*." Building relationships did not rank for Academic (Geo), Government and Shipping although reasoning for this was unclear.

Table 3.3 Top negative tactics by stakeholder group

Interest	Academic Impact	Academic Geo	eNGO	Gov't Federal	Navy U.S.	Oil and Gas	Shipping	No. Groups	Rating
# participants sample size	7	3	8	14	7	12	2		
Exaggerate/overhype/misuse info	**1** 71%	**2** 67%	**2** 63%	**1** 71%	**1** 75%	**1** 83%	0%	**6**	**28** 61%
Villainize/discredit/blame	43%	**1** 100%	**1** 75%	**2** 64%	**1** 75%	**3** 67%	50%	**5**	**22** 68%
Unwilling to compromise	**2** 57%	**5** 67%	**1** 75%	**2** 64%	**1** 75%	**2** 75%	**1** 100%	**7**	**28** 73%
Avoid/minimize/deny	**2** 57%	33%	**2** 63%	**1** 71%	38%	**1** 83%	50%	**4**	**18** 56%
Slow/delay process b/c incomplete info	**1** 71%	33%	38%	**3** 50%	0%	**5** 50%	**1** 100%	**4**	**14** 49%
Negotiate in bad faith	14%	**1** 100%	**2** 63%	29%	**2** 50%	**5** 50%	0%	**4**	**14** 44%
Exclude others	14%	**2** 67%	38%	29%	13%	**3** 67%	**1** 100%	**3**	**12** 47%
Limit dialogue	0%	33%	**2** 63%	36%	25%	33%	**1** 100%	**2**	**9** 41%
Use regulatory power to meet own needs	29%	**2** 67%	13%	14%	25%	25%	0%	**1**	**4** 25%
eNGOs use noise to stop larger activity	14%	**1** 100%	25%	21%	**1** 75%	**1** 83%	0%	**3**	**15** 45%
Argue endlessly	14%	**2** 67%	25%	29%	25%	**4** 58%	50%	**2**	**6** 38%
Do not listen	14%	33%	**2** 63%	29%	0%	17%	50%	**1**	**4** 29%
Overly burdensome admin process	0%	**2** 67%	0%	0%	25%	0%	0%	**1**	**4** 13%
Inconsistent decisions	14%	**1** 100%	0%	7%	0%	17%	0%	**1**	**5** 20%

(b) Negative tactics

Unsurprisingly, interviews raised more responses in terms of negative tactic The theory is that individuals maintain a generally positive orientation toward the w so as to maximize opportunities to interact with entities that will contribute to their w being. To be protective, they have a built-in sensitivity to negative stimuli so that t can quickly detect it and react (Taylor, 1991; Price, 1996). Negative actions, theref generate a stronger response than positive ones. Further, they create social liabilitie impacting individual outcomes and the ability of people to coordinate activities and cooperate (Labianca and Brass, 2006).

These following tactics received the highest ratings and the most number of groups. The bullets below provide an overview of each of these tactics. Table 3.4 walks through an example chain of events over time that demonstrates how the conf grows and the parties divide further when these tactics are used.

Villainize/discredit/blame

This tactic involves blaming or portraying others as negative in a public forum Five of the seven groups held this as a top three perceived negative tactic, including Academic (Geo), eNGO, Government, Navy and Oil and Gas. This is unsurprising gi the level of conflict is highest between some of these groups, and the public rhetori been ongoing for years as has litigation. As one participant stated, "*Just as in a conversation, if you are trying to talk to somebody, you do not shout at them. You do not call them names. Doing that kind of thing in public, it can really have a detrimental effect*."

There is also an element in this tactic of disrespect. Respect is defined by Merriam-Webster as "feeling or understanding that someone/something is important, serious and should be treated in an appropriate way." From a professional standpoint, it also indicates the "skill, good judgment, and polite behavior expected from a person who is trained to do a job well." In terms of participant responses, respect was expressed largely in how people treat each other (cordiality). This is not surprising given the immediate and lasting impact perceived disrespectful behavior has on relationships and fueling conflict.

Participants expressed many examples of where they perceived other stakeholders as disrespectful. Interview data recounted accusations of contrasting industry- or Navy-science as "*tobacco science*"; eNGOs as being irrational; Academic (Impacts) as being stuck in their "*ivory tower*"; and Government as only interested in "*checking the box*." The issue of marine sound and marine mammals appears fraught with respect issues. Development of respect, in thought and action, is a key factor in any human relationship and clearly needs to be addressed in to make progress in making this issue more tractable (Fisher and Shapiro, 2005).

Exaggerate/overhype/misuse information

This tactic involves using the worst or best case scenario to describe effects, selecting and using only information that best supports your needs, using information incorrectly (i.e., comparing apples to oranges). All groups, except for Shipping, rated this as a top two interest so clearly there are perceptions from most groups that information is incorrectly being used.

For 36 of the 41 participants that raised this issue, the perception was focused squarely on the eNGOs. Some felt that "*there are times when I think the eNGO community has overstepped its knowledge of the situation, has misused some of the information and that leads to more antagonism*." Another stated, "*I don't know how they get things so wrong. I don't know why they have to sort of sensationalize it. But, I think you know all of the regulatory community as well as the industry, spends a lot of time responding to stuff that's not even accurate*." Still another said, "*The report clearly says the numbers are not realistic, and we do not expect this to happen. But they still use them and spread misinformation about how we are going to kill all these animals, and they are going to be washing up on the shore*."

> "*All of the involved federal agencies concur on the need for public awareness and understanding of this complex and evolving issue. This is particularly in the face of often-inaccurate or sensationalized depictions in the media and various public fora. For example, a recent cover of the Honolulu Weekly (Vol. 18, no. 12; March 19-25, 2008) depicts active sonar as an "all purpose killer" and "anti-marine life military power" that "kills whales on contact". Such emotionalized hyperbole confuses the public and some decision-makers into believing conclusions that are wildly inconsistent with reality, amplifying the divisiveness and acrimony that has unfortunately become synonymous with this issue."*
>
> from **Human-Generated Sound on Marine Life: An Integrated Research Plan for U.S Federal Agencies** (Southall et al., 2009)

Avoid/minimize/deny

On the other hand, 22 participants raised frustrations on perceived avoidance, denial of the issue or minimizing potential impacts by other parties. Many, but not all, examples provided focused on perceived attempts by other groups to minimize the issue or not be adequately engaged in efforts to determine the range of effects.

> "*None of the growing body of scientific research has identified circumstances in which human-generated sound-- including seismic-- has adversely affected marine mammals at the population level. Consequently, based on all the available scientific information, it appears to be indisputable that there is not a "crisis" involving marine mammals and anthropogenic sound*."
>
> From Energy Producers Caucus Statement in the **Report of the Federal Advisory Committee on Acoustic Impacts on Marine Mammals** (MMC, 2006)

Three of the four groups rating this high included Academic (Impact), eNGO and Government. Their responses were aimed at frustrations with sound producers who minimized the potential for effects from their activities. One respondent stated, "*But, all these claims that the users say, "Well we've conducted seismic for so long, we've never seen any problem." You have to do a sensitivity analysis or a power analysis to show how dramatic would the effect have to be for you to see it*." Another stated, "*The oil and gas and the exploration industries are in denial that setting off an explosion every 10 seconds for three months, where the explosion is so great that it basically boils water, being in denial that there's no impact and saying that there's no impact, is fraudulent as far as I'm concerned*." Still another stated, "*I think the one that is notable from how little they have been involved and how little attention publicly they have gotten is the shipping industry. We just got the IMO guidelines passed and that is*

great…for the single largest contributor of noise into the ocean to be barely engaged, and not regulated, is a pretty striking aspect." And regarding Academic (Geos), one participant stated, "*With academics, there is arrogance – and this is a general, broad brush – but there is an arrogance to scientific researchers at times that if they are doing scientific research, it cannot be something that is negative. It has got to be positive because they are doing it for scientific research. And so that is a challenge at times to get them to see that they are part of the problem. We need them to comply with their responsibilities even though we know that they are out there trying to advance the science*."

Interestingly, the fourth group identifying this interest was Oil and Gas. Here, responses centered on other groups needing to be more engaged in the issue (mainly commercial fishing, cruise ships, construction). Responses also reflected challenges within a company or across companies in the level of acceptance or understanding of needed action. As one group member put it, in talking about internal management, "*And in the past I think that the cold hard facts are that they viewed the environmental stuff as being a cost and schedule impediment. It was not something that was helpful. It was not something that added to the bottom line. It only had potential to be negative. And it has taken a long time for people to begin to realize how breathing in the right way and doing it the right way pays dividends long-term*."

Unwilling to compromise

Ultimately, all of the above tactics add up over time to conclusions by many that the other side is unwilling to compromise. As one participant stated, "*They have a*

mission, and we have a mission. There is no crossing between the two."

> "*You are never going to get an improved outcome without people willing to compromise, willing to come to the table to say, "I know I will not get 100% of what I want. But I am willing to accept a certain lower level of percentage of what I want and here is my criteria that I need in order to accept that lower level*."

A compromise can be defined as a type of agreement where everybody loses (more or less) in order to get a collective gain. Every party eventually accepts a balance between its desires and its possibilities because compromise is the only possible way (or the least bad one) to achieve an agreement (Besson, 2005; May, 2005; Córdoba, 2013). Conversely, it can also be viewed as coming to the table to produce a win/win for all parties involved where needs are fully met but negotiable interests may be compromised (Fisher et al., 1991).

It may be that the other side is truly unwilling to compromise. It may be that other tactics are getting in the way and making it harder to see the possibility of working together toward something better. Groups are then left to decide whether it is better to forge ahead without compromise or try to determine if their perception that the other side will never bend is actually the case.

Table 3.4 How conflict increases across groups over time

eNGO(s)	Sound Producer(s)	Government
Science emerges indicating potential effects but results are mixed and unclear.		
Grow concerned and attempt to raise awareness but not yet alarm. Want more information on activities.	Unaware of issue.	Become aware of issue but not enough certainty to change requirements. Too many other issues to deal with as well.
An event happens-- such as a stranding.		
Concern turns to alarm. How could this have happened? How did we not know about the activity? Where is the desire to protect?	Surprised and hard to believe their activity is to blame. Wouldn't there have been more strandings if sound were the culprit? Want scientific evidence linking their activity.	Now paying attention but need more information to determine how to manage. Engage with academics and sound producer to determine cause. Wait for stranding report and monitor situation in the meantime. Little interaction with eNGOs.
More science but still mixed. Linkage of stranding to sound event is unclear.		
Push for precaution. Waiting for more effects to be detected may be too late. Sound producer(s) is not listening and responding too slowly. So is Government. And eNGO(s) keep learning about other activities the of concern that the sound producer(s) never mentioned.	Costly to change operations. Many environmental issues compete for attention. Want more science and predictable process. Still feel there are lots of other potential causes out there and few stranding events despite level of activity.	Agree science is unclear. Want to act precautionary but not overly so. Limited time and expertise within agency to understand technical issue. Getting more pressure from all sides. Dialogue is still with sound producer and academics. eNGO interaction is generally through letters.
Another event occurs-- another stranding or uncovering of more unshared information.		
No longer willing to wait. Build alliances. Begin public and media campaigns. Talking less directly with sound producer(s) if at all.	Adjusts activity further despite feeling there is insufficient evidence of need. Accepts government's stop-gap measures but wants more direction before taking more costly measures where effectiveness is unknown.	Agency now devoting more resources. Requires stop-gap mitigation measures pending more thorough analysis. Ability to plan next steps is challenged by increased workload to respond to political inquiries, meetings, FOIA requests, and eNGO actions. Changing the regulatory process takes time and dedicated staff that the government does not have.

eNGO(s)	Sound Producer(s)	Government
More time passes with little change in positions.		
Frustrated with lack of action and mixed messages from producer(s). Campaigning branches of eNGOs take over public messaging (not science or policy staff working issue). Ramp up rhetoric with more emotive words and photos. Generalize issue for public but simplifying message means nuances can be lost (which can frustrate eNGO science and policy staff). Rhetoric may paint sound producer and Government negatively but need to grab public and media attention.	Wait for more evidence and Government action. Want reasonable process and predictable path forward. Feel eNGOs are spreading inaccurate information and attacking producer's credibility. Frustrated with perceived irresponsible messaging. Producer does not want to intentionally harm environment and eNGO(s) is overstating potential impacts. Respond with defensive statements that may appear to minimize impacts.	Workload responding to public and political inquiries is at an all time high. Not as bothered by eNGO rhetoric as agency is used to being blamed from all sides. Public attention, however, forces agency to implement more mitigation measures and review each permit application extremely carefully. Agency lawyers must now approve all correspondences, and this causes further delays in responsiveness.
END RESULT **The debate remains now sits squarely in the public arena. Parties are not talking directly.**		
Producer has little regard for the environment and are much more powerful. Have told them what we want but they do not act. Government is little help and appear to back the producer(s). Turn to litigation and enhance public and media campaigns. Producers are unwilling to compromise. They are making money off the issue. It is useless to work with them.	eNGOs are never satisfied. Paint us negatively in public eye. Circulate misinformation just to hype up media and public and raise funds. We would never be able to make similar exaggerated statements publicly. Now they are suing. At heart, they are opposed to the reasoning for producing the sound (e.g., oil and gas). No matter what we do that will be the case. They are unwilling to compromise. They are making money off this issue through fundraising. It is useless to work with them.	Litigation results from inaction. Agency goes into protective mode. Any dialogue with external parties is shut down. Staff frustrated that workload impedes ability to find a more workable solution. Regulatory and administrative structure impedes quick response. Lots of accusations that agency not using science but each outside group has their own interpretation of what that science says. Further, outside groups do not understand the regulatory process and what restricts government from quick action on this issue. Staff are trying their best but recognize that no one will be satisfied. May be willing to settle with eNGOs to avoid going to court.

(c) Perception eNGOs using the issue to stop a larger activity

There is definitely a perception by some groups that eNGOs may be using the marine sound issue as a way to stop a larger activity that causes them greater concern (e.g., stop seismic surveys to prevent future development of fossil fuels). Specifically, 25 of the 58 participants (43%) identified this as a tactic by the eNGOs with Academic (Geos) (100%), Navy (75%) and Oil and Gas (83%) all identifying this as their top negative tactic. Is it truly the case or are other factors at play that make it only appear so?

"Stop Big Oil's Attack on Whales: Airgun exploration is not only a gateway drug to offshore drilling but, as the scientific community has recognized, a major assault on the oceans in itself." (accessed March 28, 2015 under "Act Now" at http://switchboard.nrdc.org/blogs/mjasny/obama_opens_the_east_coast_to.html)

"A Deaf Whale is a Dead Whale: Seismic airguns could devastate marine life, and harm fisheries and coastal economies along the Atlantic coast. Seismic testing in the Atlantic would also be the first major step toward offshore drilling, which further harms the marine environment through leaks, oil spills, habitat destruction and greenhouse gas emissions." (accessed March 28, 2015 at http://usa.oceana.org/our-campaigns/seismic_airgun_testing/campaign)

"NRDC has launched a campaign aimed squarely at forcing the Navy to stop the senseless killing of whales and to begin protecting them during routine training exercises." (accessed March 28, 2015 at http://www.savebiogems.org/save-whales-from-sonar/)

"Oceana works to stop the expansion of offshore oil drilling. Where drilling is occurring, Oceana works diligently to improve safety regulations in order to prevent spills, small and large, from occurring in the future. (accessed March 28, 2015 at http://usa.oceana.org/our-campaigns/seismic_airgun_testing/campaign)

"Ocean Conservancy recognizes that real leadership means developing cross-sector solutions that promote ocean health. That's why we work with the private sector to create partnerships that make sense for companies and for the ocean." (Ocean Conservancy accessed March 28, 2015 http://www.oceanconservancy.org/our-work/our-partners/)

Figure 3.1 Indications for and against perception of eNGOs as trying to stop larger activity

The document review conducted in the initial phases of this research found a much less emotive rhetoric in the earlier eNGO public reports (i.e., 1990s and early 2000s). Although this cannot be said for certain, it may be that the characterizations used by at least some of the eNGOs have grown more negative and purposefully emotive over time. This may be consistent with an internal shift on public messaging within eNGO organizations from science/policy staff to campaigners and marketers. It may also be influenced by new eNGOs joining the issue over time with less technical understanding and/or a greater dependence on emotive tactics. Still yet, it may simply be indicative of a growing frustration among eNGOs over time on perceived lack of progress.

As discussed in Chapter 2, there is an inherent intra-group identity conflict within eNGOs to "be the gladiator and not compromiser" and push for the greatest amount of environmental protection. From some eNGOS, this may come in the form of stopping the activity altogether. For others, it may come across as pushing hard to stop the activity but conceding to limits once the activity appears to have a likelihood of moving forward. Given the importance of alliances to eNGOs, intra-group conflict may occur if the alliance is contains both gladiators and compromisers. This, in turn, may hamper abilities for certain eNGOs to work in multi-stakeholder environments toward compromise. Further, these alliances with mixed members may also make it more difficult for groups on the other side to know where each eNGO stands and whether trying to find common ground is possible.

So, it is not entirely clear that the tactic of "using the issue to stop a larger activity" can be considered an across the board eNGO approach. This may be the case

for some eNGOs for some specific actions. However, there is also evidence that compromise is possible, but may be challenged by internal pressures within the eNGO community and prejudicial assumptions by other groups that eNGOs are unwilling to compromise. This should be explored further through a collaborative, transformative approach where space is created, and trust built on all sides, for groups to explore the true extent of possible solutions.

(d) Litigation as a tactic

> "*Natural resource policy and management decisions are increasingly characterized by a type of conflict in which the contested role of science is often a large part. These conflicts most often find their way to the judicial system where judges increasingly rule upon scientific grounds (Jasanoff, 1995). This means that conflicts often have a particularly American flavor, combining our faith in science and technology with our love of litigation."* (Nie, 2003)

The use of litigation as a tactic is somewhat specific to the U.S. where citizen suit provisions are central parts of environmental legislation. To date, there has been approximately ten court cases or filings related to the marine sound issue for navy sonars alone (Zirbel et al., 2011). There have also been several others related to seismic surveys for oil and gas exploration and academic purposes. The notable exception has been the commercial shipping industry given there is no legal ability to either regulate or litigate them in the U.S. This may be a reason why the level of conflict between eNGO groups and Shipping appears lower (i.e., lack of litigious atmosphere). However, it may also be from the low level of involvement from the Shipping industry as a whole as well as the extremely collaborative nature of the Shipping individuals that have been involved (especially in terms of collaborating with eNGOs).

About two-thirds of participants went into greater detail on their perceived influence of litigation on this issue. Figure 3.2 provides the top identified pros and cons of using litigation as a tactic. Appendix F contains additional information specific to each group. Overall, 37% identified positive aspects of litigation while 68% identified negative ones. Some of the respondents identified both positive and negative effects, including several eNGO participants. Not surprisingly, respondents who had previously been litigated against held much more negative perceptions of the use of litigation.

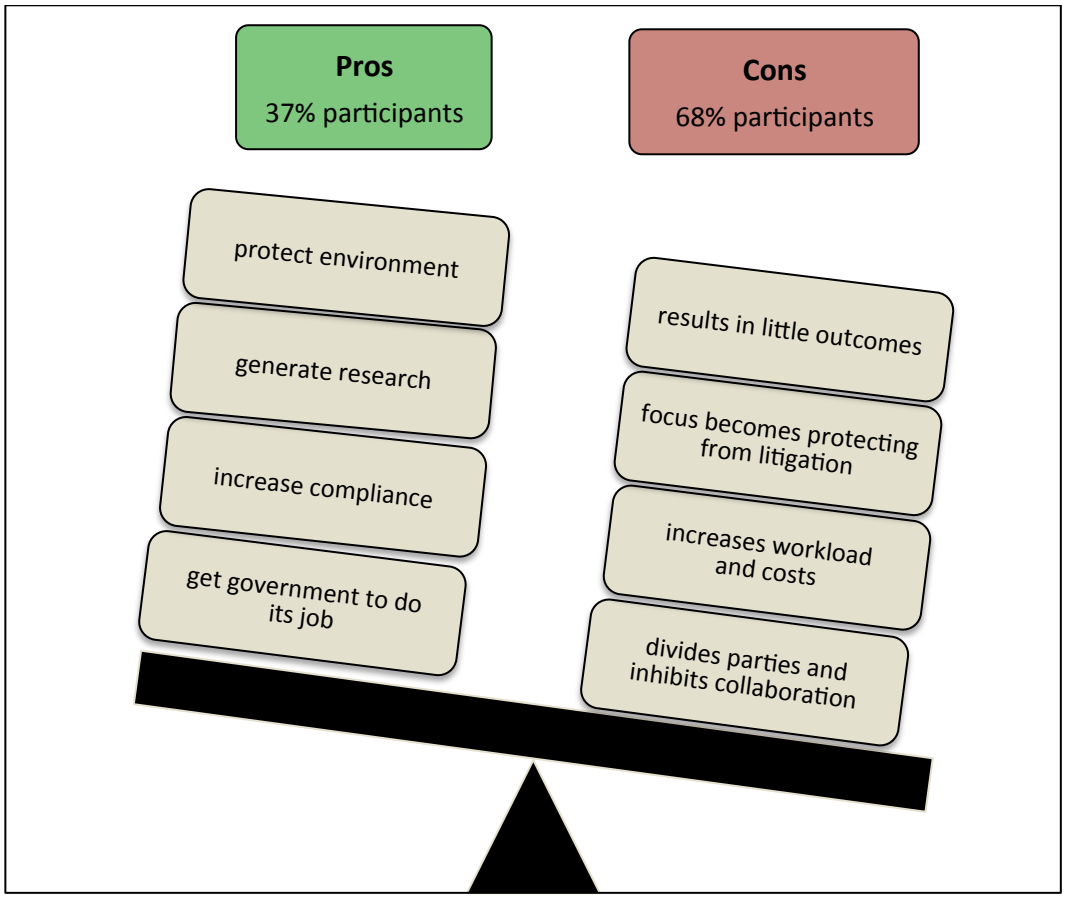


Figure 3.2 Balance of the pros and cons of litigation as a tactic

The eNGOs providing comments on the role of litigation offered both positive and negative outlooks on its use. From the positive perspective, they viewed litigation as a means to bring organizations into compliance, generate research, get parties to the table, protect the environment and get the government to do its job. From the negative perspective, they acknowledged that litigation divides parties, increases workload and costs and inhibits the desire to collaborate or communicate. Responses from the eNGOs also indicated a view that litigation was not a preferred tactic and considered as a last resort.

The relationship with eNGOs and the U.S. Navy early on was not centered in lawsuits, as it has been for the last 20 years. When concerns first arose over the use of Navy's Low Frequency Active Sonar (LFAS), there was dialogue between the parties and an agreement that the Navy would produce desired environmental analysis and conduct research into effects. There was even an event where eNGOs went out to sea on a naval vessel during an LFA exercise. As one eNGO described the experience, "*So, transparency, lots of openness…I wouldn't say goodwill all around or anything, but lots of professionalism and an attempt at transparency.*" The jump to litigation did not come until later when the parties did not appear to be able to come to further agreements. This change was described in different ways by the groups:

> "*Litigation is high profile. It often can get results… It is also a way to bring agencies to a table for productive settlement. The threat of litigation is essential to provide a stick out there without which, you seldom can get people to the table. It does not mean that you should sue. But it does mean you need to have a plausible threat of litigation in order to motivate, so there will be some parties who can negotiate*."

- eNGO participant: "*I got the sense that the Navy felt that transparency itself would satisfy us. It was just the very act of saying yes we'll do an EIS and yes we'll do this research, and no matter what the research said and no matter where the EIS led, we would be satisfied with the process…. They just didn't understand why we weren't happy they were finally complying with the process, even though the processes as far as we were concerned was coming up with results that said they couldn't deploy it the way they wanted to deploy it… So we were just asking for limits on its use. Maybe limits that were too severe for their purposes, but never the less, that's what you do when you start an opening negotiation. And then, you cut to some sort of halfway point. But they were just like…we did all this work? What's the matter? We can never satisfy you. You keep moving the goal post, and that sort of thing. So, it was a little bit frustrating all the way around*."
- Navy participants: One participant linked the change in conflict as more along the lines of the eNGOs realizing that the marine sound issue could bring in needed funding to support environmental protection, "*LFA… I think that's where they first really saw an increase in donations…this was a money maker like nothing ever had been before because it triggered everybody's anti-military stuff…to be fair they rely on donations, they don't have a lot of money. They can't take these cases to litigation or mount a campaign. They can't back too many losers or they'll deplete their war chest. So an issue like this where if you lose you don't get court costs but you're still seeing the issue pull in a pretty*

good amount of money that might fuel other campaigns to save other things or to challenge some other issue that's not as charismatic."

In general, the sound producers understood the need for mechanisms to allow outside parties to sue as a means for accountability but all commenting felt that the litigation produced little outcomes. As one sound producer noted, "*Lawsuits have never protected the ocean*." Another expressed concern over how a truly collaborative process could unfold when "*you're always worried in the back of your mind that you're opening yourself up to them to see a litigative chink in your armor to go after you... your opening yourself up to somebody who is an adversary already, by the nature of what they do*."

Government participants also commented on the role of litigation. As one remarked, "*everyone—the stakeholder, industry group, the regulatory community—has some fear of litigation. So the eNGO's are seen as sort of catalysts of this. Sometimes I think that's sort of a mistrustful relationship. Again, I don't personally have a problem with litigation because if it's unsound…I mean, it's a lot of extra work, etc. But you know we shouldn't be afraid. We should be doing our job correctly. It shouldn't be an issue. But, I think that relationship is seen…it can be a little tenuous*." Another noted how the concern over litigation could prevent the government from pursuing an alternative management approach for marine sound. As one participant stated, "*we need to put in a practical, feasible management framework that we acknowledge does not take into account all of the best available science. And it is probably a non-starter. Again that would lead to a lawsuit*." Another commented in terms of an impression that some eNGOs continue to file lawsuits despite progress—"*I think when you get to the point*

when you just have this knee jerk reaction to file a lawsuit as opposed to working with the regulators and the noise producing groups then I do think that would have a detrimental impact." Still another remarked how the threat of lawsuits has prevented their ability to get internal approval for agreements reached with eNGOs --"*…but then you have got to get it through the lawyers. So although I keep trying to tell them, "Do not worry. We have a good agreement with the environmental organizations, and they will not sue us because they know we are going to come back and work with them. In my experience, they will say, "You are kidding me, right*?"

Some Academic (Impacts) did comment on the role of litigation. One participant noted that, "*eNGOS obviously are using it as a way of bringing in cash. But the part of the role they play is by issuing these suits they put a little bit more teeth into what would be a fairly toothless process…it's only the fact that the lawsuits come down that the slow wheels of the government turns to create some teeth in the regulations. It's bad that it has to work that way*." Another stated "*negotiated settlements in a legal context are not the most constructive or science-based way to come up with mitigation rules. Because I think both sides wind up kind of making compromises that are not entirely informed by science.*"

Section 3.03 Improved outcomes

This section lays out the top improved outcomes identified across all of the groups. These outcomes are philosophical or action-oriented in nature. They were asked and offered through the lens of what would need to be considered in a large-scale, long-term collaborative effort.

Interviewees were asked to identify what they would consider to be improved outcomes on the marine sound issue. After identification of these outcomes, they were then asked to look at the Conflict Satisfaction Triangle (see Appendix A) and respond as to whether any of the three areas (process, relationship, substance) were more important in reaching their identified improved outcomes.

Figures 2.1-2.7 in Chapter 2 summarize the top interests and/or needs, improved outcomes and perceptions (positive and negative) of tactics of each of the seven stakeholder groups. Chapter 2 also provides themes apparent in the data for each of these groups that help understand particular areas of importance and/or sensitivity.

Tables 3.5 to 3.8 to follow then provide a comparative look at the top improved outcomes identified by each stakeholder group. These are divided into the categories of process, relationship and substance. Substance is further divided into sub categories of regulation and science. Shaded areas show top outcomes identified by at least 50% of the group (except for Shipping where only 100% response rates were used). "No. Groups" indicates how many of the seven groups designated a high level of importance to a particular outcome. Of the groups indicating importance, "Rating" then aims to apply a quantitative measure to the level of importance across groups (again through points system with 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Improved outcomes with higher "No. Groups" and "Rating" indicate areas for greatest potential of commonalities in improved outcomes. Appendix C contains the codebook that shows a complete listing of all interests, tactics and improved outcomes identified during this research.

Table 3.5 Top process recommendations by stakeholder group

Interest # participants sample size	Academic Impact 7	Academic Geo 3	eNGO 8	Gov't Federal 14	Navy U.S. 7	Oil and Gas 12	Shipping 2	No. Groups	Rating
Look holistically	**1** 71%	33%	**2** 75%	**1** 79%	**2** 63%	**2** 67%	50%	**5**	**22** 63%
Get parties to clarify what they want	**2** 57%	**1** 67%	**1** 88%	**4** 57%	**2** 63%	**1** 75%	0%	**6**	**25** 58%
Look long-term	**2** 57%	**1** 67%	**3** 63%	**3** 64%	**1** 75%	**4** 50%	**1** 100%	**7**	**27** 68%
Choose personalities carefully	**2** 57%	0%	**3** 63%	**3** 64%	**3** 50%	**3** 58%	50%	**5**	**16** 49%
Buy in from senior managers	71% 14%	0%	38%	**2** 71%	**3** 50%	**4** 50%	50%	**3**	**9** 39%
Flexibility/creativity for new solutions	43%	33%	13%	29%	**2** 63%	**2** 67%	**1** 100%	**3**	**13** 50%
More focused, long-term participants	**2** 57%	33%	38%	29%	13%	42%	50%	**1**	**4** 37%
Focus on common agreements first	14%	0%	**4** 50%	29%	25%	**4** 50%	0%	**2**	**4** 24%
Get people off their party line	14%	33%	**4** 50%	**3** 64%	25%	42%	50%	**2**	**5** 40%
Expect will win some and lose some	0%	0%	**4** 50%	7%	0%	17%	0%	**1**	**2** 11%

Shaded areas show top improved outcomes identified by at least 50% of the group, except for Shipping where only 100% response were ranked. Higher numbers indicate more importance to the group. "No. Groups" show how many groups saw as important. "Rating" indicates the overall level of importance across all groups (i.e 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Higher "No. Groups" and "Ratings" show areas of greatest common improved outcomes across groups.

Table 3.6 Top relationship recommendations by stakeholder group

Interest # participants sample size	Academic Impact 7	Academic Geo 3	eNGO 8	Gov't Federal 14	Navy U.S. 7	Oil and Gas 12	Shipping 2	No. Groups	Rating
Honesty negotiate in good faith	**1** 86%	**1** 100%	**1** 100%	**1** 93%	**1** 100%	**3** 83%	**1** 100%	**7**	**33** 95%
Respect each other	**2** 71%	**1** 100%	**1** 100%	**2** 86%	**2** 88%	**1** 100%	 50%	**6**	**27** 85%
Collaborate	**3** 57%	**1** 100%	**3** 75%	**3** 71%	**2** 88%	**2** 92%	 50%	**6**	**22** 76%
Protect own and others' credibility	 43%	**1** 100%	**2** 88%	**2** 86%	**2** 88%	**3** 83%	 50%	**5**	**20** 77%
Acknowledge role in problem	**2** 71%	 33%	**2** 88%	**2** 86%	**4** 63%	**3** 83%	 50%	**5**	**17** 68%
Listen/understand others' needs	 43%	**2** 67%	**2** 88%	**3** 71%	**2** 88%	**5** 67%	**1** 100%	**6**	**21** 75%
Willingness to compromise	**3** 57%	**2** 67%	**2** 88%	**3** 71%	**4** 63%	**3** 83%	**1** 100%	**7**	**24** 77%
Avoid public attacks	**3** 57%	**1** 100%	**3** 75%	**3** 71%	**3** 75%	**5** 67%	 50%	**6**	**18** 71%
Maintain dialogue	 29%	 33%	**1** 100%	**3** 71%	**5** 50%	**4** 75%	**1** 100%	**5**	**16** 65%
Share data/info	 43%	**2** 67%	 38%	**1** 93%	**5** 50%	**4** 75%	 0%	**4**	**12** 52%
Inclusiveness	**3** 57%	**2** 67%	**4** 63%	 43%	**5** 50%	**2** 92%	**1** 100%	**6**	**19** 67%
Build relationships	 43%	 33%	**3** 75%	 43%	**4** 63%	**2** 92%	 0%	**3**	**9** 50%
Develop shared vision/ownership	 43%	 33%	 25%	 36%	 13%	**6** 50%	**1** 100%	**2**	**5** 43%

Interest # participants sample size	Academic Impact 7	Academic Geo 3	eNGO 8	Gov't Federal 14	Navy U.S. 7	Oil and Gas 12	Shipping 2	**No. Groups**	**Rating**
Honest about end game	29%	**1** 100%	**4** 63%	43%	**3** 75%	**2** 92%	50%	**4**	**14** 65%
Experiential/mutual learning	43%	**2** 67%	25%	21%	25%	42%	50%	**1**	**4** 39%
Informal/off the record interactions	29%	33%	**5** 50%	43%	13%	17%	50%	**1**	**1** 34%
Transparent on org's activities	14%	**2** 67%	**4** 63%	**4** 64%	25%	42%	0%	**3**	**8** 39%
Do not blame or argue past	14%	0%	**5** 50%	36%	25%	17%	50%	**1**	**1** 27%
Separate people from the problem	**3** 57%	0%	**5** 50%	21%	25%	17%	50%	**2**	**4** 31%
Acknowledge good work	14%	0%	25%	7%	**5** 50%	42%	0%	**1**	**1** 20%

Shaded areas show top improved outcomes identified by at least 50% of the group, except for Shipping where only 100% response were ranked. Higher numbers indicate more importance to the group. "No. Groups" show how many groups saw as important. "Rating" indicates the overall level of importance across all groups (i.e 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Higher "No. Groups" and "Ratings" show areas of greatest common improved outcomes across groups.

Table 3.7 Top substance (regulation) recommendations by stakeholder group

Interest	Academic Impact	Academic Geo	eNGO	Gov't Federal	Navy U.S.	Oil and Gas	Shipping	No. Groups	Rating
# participants sample size	7	3	8	14	7	12	2		
Predictability in regulations	**1** 71%	**1** 100%	**1** 75%	**2** 57%	**1** 88%	**1** 100%	**1** 100%	**7**	**34** 84%
Determine balance	43%	**1** 100%	**1** 75%	**1** 79%	**4** 50%	**3** 67%	50%	**5**	**20** 66%
Understand how science used in regs	**1** 71%	**2** 67%	0%	**2** 57%	**3** 63%	**5** 50%	**1** 100%	**6**	**22** 58%
Consistency/appropriateness of regs	43%	**1** 100%	38%	43%	**2** 75%	**5** 50%	50%	**3**	**10** 57%
Make regs/permits less burdensome	43%	**1** 100%	38%	7%	**3** 63%	**4** 58%	0%	**3**	**10** 44%
Appropriate mitigation for situation	14%	33%	38%	29%	38%	**3** 67%	**1** 100%	**2**	**8** 46%
New ways to decision-make w/ uncertainty	29%	0%	38%	36%	13%	**5** 50%	50%	**1**	**1** 31%
Clarity/guidance on reg process	29%	**2** 67%	13%	28%	25%	**9** 25%	**1** 100%	**2**	**9** 41%
Define precautionary	14%	**2** 67%	38%	43%	0%	42%	50%	**1**	**4** 36%
Increase compliance with regs	29%	33%	**3** 50%	36%	**2** 75%	**4** 58%	0%	**3**	**9** 40%
Level of concern vs other issues	14%	33%	0%	29%	38%	**4** 58%	0%	**1**	**2** 25%
Integration with industry risk assessments	14%	33%	0%	0%	0%	**2** 83%	0%	**1**	**4** 19%

Shaded areas show top improved outcomes identified by at least 50% of the group, except for Shipping where only 100% response were ranked. Higher numbers indicate more importance to the group. "No. Groups" show how many groups saw as important. "Rating" indicates the overall level of importance across all groups (i.e 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Higher "No. Groups" and "Ratings" show areas of greatest common improved outcomes across groups.

Table 3.8 Top substance (science) recommendations by stakeholder group

Interest # participants sample size	Academic Impact 7	Academic Geo 3	eNGO 8	Gov't Federal 14	Navy U.S. 7	Oil and Gas 12	Shipping 2	No. Groups	Rating
Understand/train participants on science	**1** 71%	**1** 100%	**1** 75%	**1** 86%	**1** 63%	**1** 92%	**1** 100%	**7**	**35** 84%
Long-term, prioritized, coord. strategy	 43%	**2** 67%	**2** 50%	**2** 50%	**1** 63%	**3** 67%	 50%	**5**	**20** 56%
Share data/info pull together for use	**2** 57%	**2** 67%	**2** 50%	**1** 86%	 38%	**2** 75%	 0%	**5**	**21** 53%
Agree on answerable science questions	**2** 57%	 0%	 38%	 43%	 13%	**4** 58%	 50%	**2**	**6** 37%
Understand/train participants on tech	**2** 57%	**2** 67%	 25%	 29%	**2** 50%	 33%	 0%	**3**	**12** 37%
Collaborate on science/funding	 29%	 33%	 0%	 29%	**2** 50%	**3** 67%	 50%	**2**	**7** 37%
Define precautionary	 14%	**2** 67%	 38%	 43%	 0%	 42%	 50%	**1**	**4** 36%
Level of concern vs other issues	 14%	 33%	 0%	 28%	 38%	**4** 58%	 0%	**1**	**2** 24%

Shaded areas show top improved outcomes identified by at least 50% of the group, except for Shipping where only 100% response were ranked. Higher numbers indicate more importance to the group. "No. Groups" show how many groups saw as important. "Rating" indicates the overall level of importance across all groups (i.e 1=5 points, 2=4 points, 3=3 points, 4=2 points, 5=1 point and ≥6=0). Higher "No. Groups" and "Ratings" show areas of greatest common improved outcomes across groups.

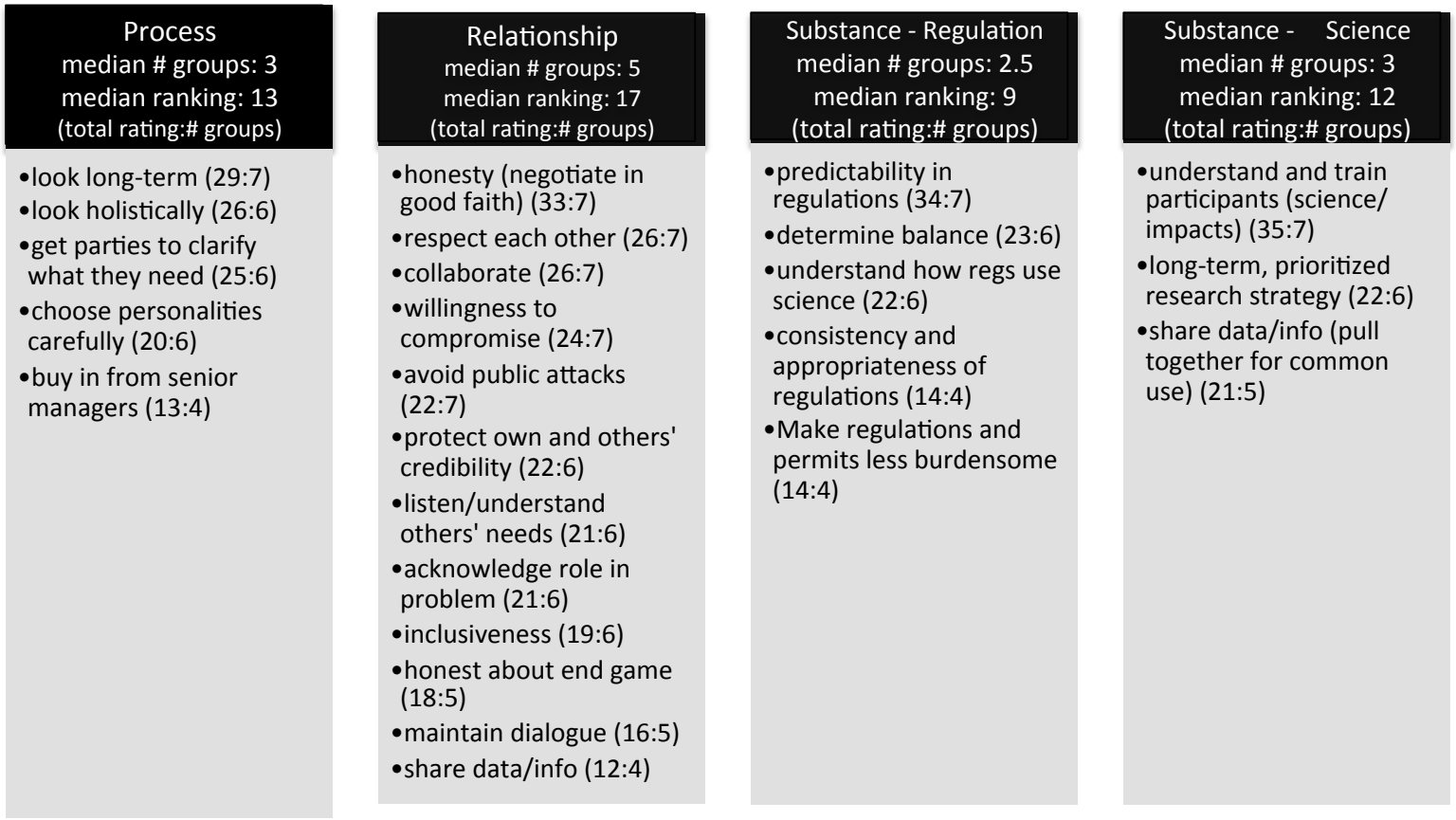


Figure 3.3 Top improved outcomes by number of groups and total rating

Section 3.04 Complicating factor of the Marine Mammal Protection Act

> "*When it was put into law, noise was not an issue. It just was not contemplated. They were talking about killing marine mammals in fishing nets. That is really where the biggest impact seemed to be at the time. And so some of the definitions or aspects of the MMPA do not seem to lend themselves well to an acoustic impact – things like small numbers.*"

There was one additional area that was raised by interviewees and is worth its own discussion. This concerns participant responses to the topic of the U.S. Marine Mammal Protection Act (MMPA; 16 U.S.C. § 1371 et seq.) and its effectiveness in managing the marine mammals and sound issue in the U.S.

The MMPA is arguably one of the most protective environmental statutes in the U.S., and perhaps even in the world. It established a moratorium on the taking of marine mammals in U.S. waters with take being defined as "to hunt harass, capture, or kill" any marine mammal or attempt to do so. While its main objective is to provide protection to marine mammals, it does allow exemptions, under specified conditions, for the taking of marine mammals incidental to commercial activities, scientific research and public display. The granting of these authorizations, and the requirements for their implementation, has long been the subject of controversy among many interested parties. As one participant stated, "*I think probably one of the biggest unresolved non-technical issues is regulatory uncertainty. So in the U.S. system…it is virtually impossible under the MMPA for a person to understand that they are acting within the law or not*."

Although there were no specific questions directed at the MMPA during the interviews, it was apparent that many interviewees wanted to discuss the topic. In total,

there were 192 coded segments from 45 of the 58 participants (response rate of 78%). Table 3.9 summarizes types of feedback provided by respondents on the MMPA.

Table 3.9 Coded segments for the Marine Mammal Protection Act

MMPA Code	respondents %
challenges of individual animal vs. population (how to define small numbers)	28%
lack of clarity/predictability	26%
regulations do not adapt/inflexible	10%
strong act	10%
multiple statutes complicate	9%
true intent being misapplied	7%
consider fishing approach	7%
unequal/inadequate regulatory pressure	7%
segmentation	7%
undermined by powerful applicants	5%
time crunch to make regulatory decisions	5%
get rid of five year process	3%
citizen suits are important	2%
military level B definition for all	2%
change in segments vs overhaul	2%
how to holistically manage noise under MMPA	2%

Very importantly, and without exception, all participants providing responses on this topic felt that the MMPA was not designed to adequately address the marine sound issue. This was consistent across respondents regardless of their group affiliation (e.g., sound producer, eNGO, Government). A number mentioned the current structure under the MMPA for commercial fishing as more suitable. The clear challenge, however, was the concern about how any changes to the MMPA would be managed, particularly in

light of the current Congress, and whether the provision for citizen suits would be maintained. In addition, several stakeholders felt the MMPA was being "*undermined by powerful applicants*" and that opening it up for revisions would lead to less protection. Clearly, any future collaborative effort in the U.S. will need to discuss and address the issue of the MMPA's effectiveness in regulating marine sound and whether it can be made more effective while still meeting the interests of all stakeholders.

> "*I would agree about whether it is really well suited to dealing with this kind of a problem, and whether it would be better to start from scratch and come up with a regulatory statute focused specifically on the unique problems that noise presents in the oceans*."

CONCLUSIONS

This chapter importantly shows what each group needs, what tactics increase or decrease conflict for them and how they envision making progress on the marine sound issue. This is highly valuable information in understanding where common needs exist, understanding how an individual or group's actions may affect other groups (positively or negatively) and beginning to understand a path forward for designing a collaborative effort to make the marine sound issue more tractable.

Some of the key messages from the data results in this chapter are noted below. All of these should be considered in any future collaborative effort on the marine mammals and issue.

- Inter-group identity conflict promotes prejudices that lead to avoidance of working together. This inhibits collaborating toward a common vision of improving outcomes for all (Burton, 1986; Lederach, 2003; Stets and Biga, 2003).

- Group identity conflict moves the focus away from the individual to the group. When group identity is attacked, group members will align and act more aggressively or competitively than as individuals. All involved no longer see individuals on the other side, but only the group, and then make prejudicial assumptions about how all members of the group will behave.
- The value of a transformative approach is it brings the focus away from the group and back down to the individual level where there is greater ability to operate with more respect, creativity, flexibility and compromise. Further, it helps promote a better understanding among participants of the nature of conflict itself, and how it is expressed in social interactions, so that personal relationships can strengthen and the dialogue can move away from a more purely competition basis.
- Such a process must be preceded and informed by a clear understanding of the contextual reasoning behind the conflict, including the underlying interests and/or needs, perceptions of positive and negative tactics and ideas for improved outcomes for each group and how these interact to either increase or decrease tractability.
- Data resulted in identification of key *interests* and/or *needs* shared in common across a majority, and in some cases all, of the groups. It is essential to determine which interests are fundamental (i.e., a need) and which may be negotiable (Fisher et al., 1991; Dukes, 1993; Provis, 1996). These interests/needs included:

- honesty (must increase a perceived sense of honesty among participants)
- understand science (There is a need to reconcile and align expectations on how science can or cannot make this issue more tractable. There is certainly an important role for science, but it cannot be pursued as the only path to resolving this issue.)
- accountability
- address mutual needs (create a win/win situation)
- predictability (This is extremely important to some groups and any progress toward increasing predictability may help substantially alleviate the conflict).
- understand needs/perspectives of others
- environmentalism (green practice)
- balanced/good enough approach (There is clearly a need for more dialogue between groups to more clearly understand, listen and distinguish where there are possibilities for balance and where there are not.)

- Although not ranked as a top interest/need, data revealed a sense by many that all parties, in some way or another, are receiving financial security from this issue remaining intractable. Results were unclear as to degree this may be a factor, but it should be openly addressed in any future collaborative effort.
- Tactics can have a large influence in either escalating or diminishing inter-group conflict. The use of negatively perceived tactics will increase conflict.

Collaborative tactics are needed to preserve a relationship through conflict, and are more likely to lead to productive conflict management.

  - The top Positive Tactics identified across groups included:
    - collaborate
    - maintain dialogue
    - build stronger relationships
  - The top Negative Tactics identified were:
    - villainize/discredit/blame
    - exaggerate/overhype/misuse info
    - avoid/minimize/deny
    - unwillingness to compromise

- Development of respect, in thought and action, is a key factor in any human relationship and clearly needs to be addressed in to make progress in making this issue more tractable (Fisher and Shapiro, 2005). Interviewees provided many examples of perceived disrespect (e.g., blaming, discrediting, public attacks, name calling). It is absolutely essential that participants treat each other with respect, given its tie to many human fundamental needs (see Table 1.1 in Chapter 1) (Burton, 1986). Moving away from the group conflict mentality will also help in that it may allow parties to 'separate the people from the problem' and begin to relate more to the person on the other side of the table.

- Three other topics warrant consideration in any future collaborative effort.
    - ground-truthing the perception that eNGOs are using the marine sound issue as a way to stop a larger activity that causes them greater concern (e.g., stop seismic noise from surveys so prevent future development of fossil fuels). While there is evidence that this may be the case for some eNGOs and some activities, there was also evidence that compromise is possible. However, the potential for finding a workable solution may be challenged by internal pressures within the eNGO community, such as differing goals between eNGOs involved in an alliance (compromiser vs. gladiator) and prejudicial assumptions by other parties.
    - There were mixed results from participants as to the role of litigation on this issue with 37% identifying positive aspects of litigation while 68% identified negative ones. Qualitative responses indicated that litigation was not a preferred tactic, even by eNGOs, yet it still remains prevalent in the U.S. A better understanding by all groups of why litigation is pursued and the effects it has on communication and trust between groups would likely help identify some paths forward toward more collaborative efforts.
- Key Improved Outcomes identified across the groups are reiterated below. Each of these should be explicitly discussed to understand the perspectives of groups. In addition, the codebook in Appendix C contains a listing of all improved outcomes raised by participants, regardless of the response rate (specifically look under the Collaboration codes).

Table 3.10 Recap of improved outcomes groups have in common

Process	Relationship	Substance-Regulation	Substance- Science
• look long-term • look holistically • get parties to clarify what they need • choose personalities carefully	• honesty (negotiate in good faith) • respect each other • collaborate • willingness to compromise • avoid public attacks • protect own and others' credibility • listen/understand others' needs • acknowledge role in problem • inclusiveness • maintain dialogue	• predictability in regulations • determine balance • understand how regs use science	• understand and train participants (science) • long-term, prioritized research strategy • share data/info (pull together for common use)

Chapter 4
Building a Framework

This research described the issue of marine mammals and sound as a truly Wicked Environmental Problem (WEP) characterized by high levels of scientific uncertainty on risks, intermingling political/regulatory complexities, regularly evolving ecological and social environments, and diverse stakeholder values and viewpoints. It has demonstrated that the history and the relationships between some major actors is now rooted firmly in identity conflict, leading to prejudices and avoidance of working together toward a common vision. Further, the existing federal linear decision-making approaches and the confines of the U.S. regulatory process further add conflict. It is the mix of these characteristics that leads to an issue becoming wicked or intractable and remaining so (Dukes, 1993; Lederach, 2003; Stets and Biga, 2003; Bush and Folger, 2004; Kriesberg, 2011; Balint et al., 2011; Madden and McQuinn, 2014).

Ultimately, the wickedness of the issue is not about the science, nor will the science ever tame the issue on its own. Rather, the issue is intractable because of the conflict *between* people about the most appropriate path forward (Dukes, 1993; Lederach, 2003; Madden and McQuinn, 2014). It is then imperative to understand, address, and transform this conflict in order to move off the decision carousel toward improved outcomes for all involved.

This chapter examines the role of relationship and its importance in building group capacity to problem solve. It also provides recommendations for a path forward by describing a framework for a collaborative, transformative effort built on the key findings of this research (as described in the previous chapters).

Section 4.01 Role of relationship

Transformative processes focus on relationship as the key to building change. Relationships are not only a cause of conflict but are also the solution. Whether you want to call it rapport, trust, social networking, capacity building, developing better relationships is absolutely essential to making issues more tractable. Relationships help participants look beyond the presenting problem and understand the situation of another. Once this understanding is achieved, methods can be used to change the way the conflict is expressed and move the dialogue from competition, or even aggression, to conciliation and cooperation (Dukes, 1993; Lederach, 2003; Dukes et al., 2008; Madden and McQuinn, 2014).

During a transformative process, participants are encouraged to be open and honest about the conflict and express emotion. This may appear counterproductive and certainly not the norm for the marine mammals and sound issue. (Importantly, allowing for expressing of emotions does not mean disrespectful or unfacilitated dialogue, for structure and parameters can be established through agreed upon ground rules (Dukes et al., 2008). There is conclusive biological evidence, however, that decision-making is neurologically impossible without being informed by emotions (Sanfey, 2007). Emotions are, in fact, critical for building group intelligence and social capital (Kramer, 1997).

They make us more effective, are essential to good judgment, speed up reasoning, build trust and connection, and provide vital feedback. Further, people need to be heard and allowed to express emotion before they can open their minds (Innes and Booher, 1999; Bush and Folger, 2004;).

Participation in a well-designed transformative process actually empowers parties to better understand all sides of the issue, have a greater opportunity to explain their viewpoints and listen to those of others, and consider the available information. This creates network power, opens minds to develop creative, workable solutions and allows participants (and collaborative groups) to become more capable of learning, adapting to change, and sustaining a long-term vision (Fisher et al., 1991; Booher and Innes, 2002; Zhang and Dawes, 2006; Blackstock et al., 2007; Huer et al., 2007; Reed, 2008; Madden and McQuinn, 2014).

(a) Testing for relationship

In order to test the role of "relationship" in this research, attention was paid during interviews and data analyses in two areas: (1) the role of relationship in the conflict to date and (2) how relationship-building may or may not help reach a participant's identified improved outcomes. For the first aspect, all final codes were reviewed to determine which held the greatest degree of relationship, meaning the content revealed aspects of what was causing poor relationships and what was needed to improve them (e.g., respect as an interest, villainizing as a tactic). These were spontaneous responses by interviewees versus direct answers to specific questions. For the second aspect, participants were specifically asked to state their improved outcomes,

provided the Conflict Satisfaction Triangle in Appendix A and then asked to identify if any aspect of the figure (process, relationship, substance) was more essential in reaching their identified improved outcomes. These results were tabulated where participants responded. Finally, the researcher categorized improved outcomes into the three areas (process, relationship, substance) in order to elucidate further what and how many were identified for each area.

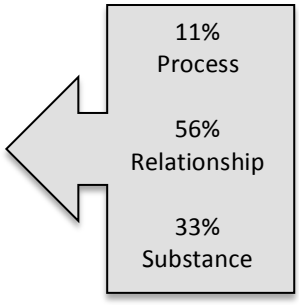
(b) Evidence of relationship as the key factor in reducing conflict

When asked directly whether process, relationship or substance were most important in reaching a participant's identified improved outcomes, 54% of participants, or 29 interviewees, directly answered this question. The remainder did not answer or stated they were unsure. Of these 29 participants, 55% identified relationship as being more essential to reaching improved outcomes, 17% identified process, 17% substance, and 11% identified all categories collectively. Although only slightly more than one-half of the interviewees answered, the response rate to relationship was more than all of the other areas combined.

Indirect evidence of the important role of relationship was more apparent when looking at the coded data across interests/needs, tactics and improved outcomes.

Table 4.1 Top interests/needs - percentage of process, relationship and substance

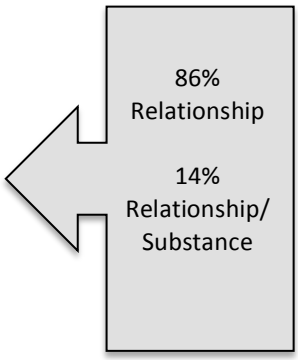
Top Interests	No. Groups	Rating	% total participants	Category
Understand science/impacts	7	28	82%	S
Honesty	6	28	77%	R
Accountability	7	26	70%	R
Predictability	5	21	75%	P
Address mutual needs	6	20	70%	R
Understand needs of others	6	19	70%	R
Enviro (green practice)	5	14	54%	S
Balanced/good enough approach	5	13	61%	S
Respect others	4	10	52%	R



In assessing tactics, there are clear indications that relationship holds more importance than process or substance, at least in regards to the number of tactics raised by participants (via direct questions as well as spontaneously) on what other groups or individuals have done that has increased conflict or decreased it.

Table 4.2 Top tactics - percentage of process, relationship and substance

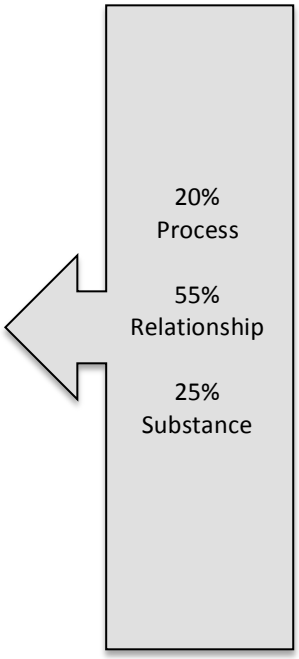
Top Tactics	No. Groups	Rating	% total participants	Category
Collaborate	4	17	56%	R
Maintain dialogue	3	14	49%	R
Build stronger relationships	4	15	40%	R
Exaggerate/overhype/ misuse info	6	28	61%	R, S
Villainize/discredit/ blame	5	22	68%	R
Unwilling to compromise	7	28	73%	R
Avoid/minimize/deny	4	18	56%	R



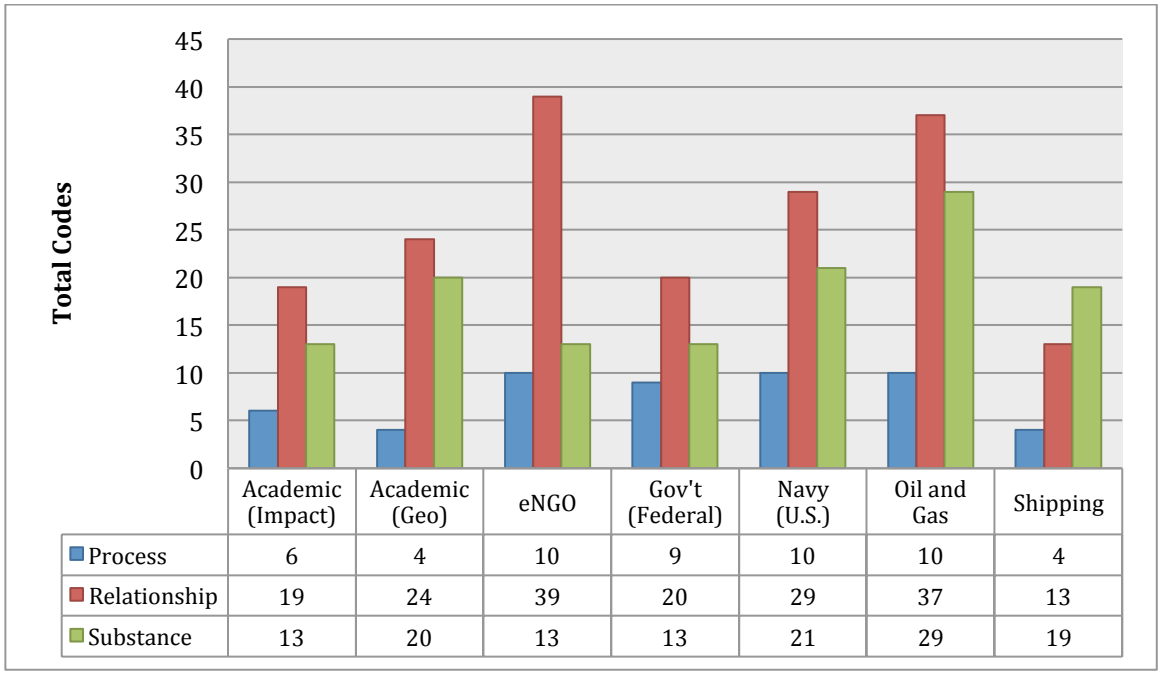
An analysis of participant-identified improved outcomes also revealed a greater emphasis on relationship.

Table 4.3 Top improved outcomes - percentage of process, relationship and substance

Top Improved Outcomes	No. Groups	Rating	% total participants	Category
Look holistically	5	24	63%	S
Look long-term	7	29	68%	P
Get parties to clarify what they need	6	25	58%	P
Choose personalities carefully	5	19	49%	R
Honesty (negotiate in good faith)	7	33	95%	R
Respect each other	6	27	85%	R
Collaborate	6	22	76%	R
Listen/understand others' needs	6	21	75%	R
Willingness to compromise	7	24	77%	R
Protect own and others' credibility	5	20	77%	R
Inclusiveness	6	19	67%	R
Avoid public attacks	6	18	71%	R
Acknowledge role in problem	5	17	68%	R
Maintain dialogue	5	16	65%	R
Predictability in regulations	7	34	84%	S
Understand how science used in regulations	6	22	58%	S
Determine balance	5	20	66%	S
Understand/train participants on science	7	35	84%	S
Long-term, prioritized, coord. research strategy	5	20	56%	P
Pull together data/info and share	5	21	53%	P



The above analyses look collectively at the group responses. To further test the role of relationship, it is also useful to look at the emphasis placed on it by each group. Figure 4.0 below combines all of the top interests/needs, tactics and improved outcomes by each group and then tabulates how many are process, relationship or substance. It reflects the differing amount of emphasis groups place on relationship compared to process and substance. Again, relationship had the highest response from all groups (median of 24) when compared to process (median of 9) or substance (median of 19). The only exception was for Shipping, and this was likely due to the low sample size of that group.



	Academic (Impact)	Academic (Geo)	eNGO	Gov't (Federal)	Navy (U.S.)	Oil and Gas	Shipping
Process	6	4	10	9	10	10	4
Relationship	19	24	39	20	29	37	13
Substance	13	20	13	13	21	29	19

Figure 4.1 Comparison of codes by group for process, relationship and substance

Whether or not participants outwardly recognize it, these results clearly indicate a perceived need to focus on building stronger relationships. Such a need cannot be achieved through the current practices of fragmenting the issue into workshops and project decisions nor by leveraging one's own group over all others. It cannot be done through fractured, shorter-term collaborations, including only selected players, nor by attempting to win the battle in the media, court or public realms. Instead, it can best be met through the development of a long-term collaborative, transformative effort that focuses on building relationships first so that there is sufficient group capacity to handle conflict constructively and productively now and for years to come. Without such increased focus on relationship, it will be hard to ever progress the process and substance.

Section 4.02 Building a transformative approach

> "*Transformation's guiding question is this: how do we end something not desired and build something we do desire?"* (Lederach (2003), page 30)

Why recommend a transformative approach? Largely due to its focus on relationship building given the evidence provided during this research indicating improved relationships as a critical need to make progress on the marine mammals and sound issue. Conflict transformation is about building and maintaining relationships so that progress can be made on the issue at hand, both in the short and long-term. Conflict transformation theory reflects a better understanding of the nature of conflict itself and the relationship among participants. It does not seek to resolve the immediate problem or control conflict but rather to recognize the conflict as a natural social occurrence and

address it within the dialogue (Dukes, 1993,1999; Lederach, 2003; Madden and McQuinn, 2014). It is based on a premise that conflict, by its nature, highlights the differences between people and positions and not the similarities. Further, conflict changes relationships in predictable ways, altering communication and patterns of social organization, altering images of the self and of the other (Rupesinghe, 1994; Kriesberg, 1998; Botes, 2003).

The focus in a conflict transformation process is on openly addressing perceptions of issues, actions (tactics), problem definition and other people or groups so that each group gains a relatively accurate understanding of the others (also called recognition by Bush and Folger (1994)). Such a level of understanding allows for the group to get past positions ("what" is wanted) and reach the underlying reasons why it is needed, including interests (negotiable) and needs (non-negotiable). Mediation methods can then be used to change the way the conflict is expressed and move the dialogue from competition or even aggression to conciliation and attempted cooperation.

A transformative process strengthens personal relationships that can then facilitate transforming the group social system (Dukes, 1993, 1999). Social organizations are learning networks of interested parties collaboratively deliberating on complex decisions and iteratively moving toward an adaptive solution, such as described in NRC (2006) and Balint et al. (2011). They build social capitol and what results is a network more capable of learning and adapting to change (Daniels and Walker, 1996; Booher and Innes, 2002; Zhang and Dawes, 2006; Blackstock et al., 2007). Participants are empowered to define their issues and seek their own solutions and can approach the current and future

problems with stronger, more open views (called empowerment by Bush and Folger (1994)). The conflict itself therefore becomes less destructive and less of a hindrance to making progress on potential paths forward (Schrock-Shenk and Stutzman, 1995; Schrock-Shenk and Ressler, 1999; Green, 2002).

- **Practice 1: Develop a capacity to see presenting issues as a window**. Avoid urgency for a quick solution. Look behind immediate issue to see what lies beyond to uncover the relational context and causes of conflict. Take time to understand the situation of another person or group, and they will do the same for you.
- **Practice 2: Develop a capacity to integrate multiple time frames.** Develop strategy in multiple time frames. Do not be constrained by short-term strategies but integrate them with long-term change. Recognize which processes and time frames are needed to address the different kinds of change. Develop a visual time frame that includes (1) workable solutions for more short-term, immediate problems and (2) longer-range, system-wide strategic change.
- **Practice 3: Develop a capacity to pose the energies of conflict as dilemmas**. Break down the issue. Identify where pieces seem to contradict each other (i.e, you feel you must pick one or the other but not both). Develop creative but integrated responses rather than an either/or approach (e.g., how can we address A and at the same time build B?).
- **Practice 4: Develop a capacity to make complexity a friend, not a foe**. See conflict as a positive opportunity for change. Embrace the complexity rather than let it overwhelm you. See complexity as possessing untold opportunities for constructive change. Trust the capacity of human systems to generate options. Pursue those that appear to hold the greatest promise for constructive change but do not lock rigidly to one idea or approach. Use the opportunity to create new ways to look at old patterns.
- **Practice 5: Develop a capacity to hear and engage the voice of identity and relationship**. Recognize and develop processes that engage the deeper core of the conflict (i.e., understand and transform). Two central "root causes" of social conflict are identity and relationship. Identity is about protecting a sense of self and group survival. Identify is then deeply rooted in relationships with others. Create spaces and processes (i.e., open dialogue rather than straight to negotiation) that encourage expression of identity and listen for them. Ensure a safe environment that enables the best opportunity for honest dialogue, iterative learning (versus a one time process to understand), and appropriate exchange so that trust can be built. Do not assume dialogue has to only be formal but allow for creative ways to build relationships. Be attentive to people's perceptions of how identity is linked to power and the definition of the systems and structures that organize and govern their relationships.

Figure 4.2 Five capacities of a transformative process (Lederach, 2003)

Section 4.03 Summary of key research findings

The following tables revisit key findings from the each of the chapters. They are repeated here as a means to reinforce their importance as well as provide one section in this dissertation that summarizes all critical points.

(a) Key results from Chapter 1 (Describing the Problem)

Chapter 1 explained what makes the issue wicked and provided examples of disputes, underlying conflict and identity conflict on this issue

Table 4.4 Key reasons why marine sound has become wicked

Marine mammals hold high regard	Marine mammals are valued in western culture for aesthetic, educational and spiritual reasons and may even be an icon for a new conservation ethic (Kalland, 1993; Lavigne et al., 1999). (For an interesting account of how the status of marine mammals improved over time see "*What, when how: Popular Culture and Literature (marine mammals)* (accessed April 11, 2015 at http://what-when-how.com/marine-mammals/popular-culture-and-literature-marine-mammals/).
High level of scientific uncertainty	Decades of research have answered some important questions, such as likely situations where sound may cause hearing damage or direct mortality. However, key questions still remain unanswered. Scientific results may also answer one question but raise many more in the process.
Political and regulatory complexity	Many countries have laws in place for the protection of the environment, including marine mammals. These same countries also have laws that promote resource development and related ocean uses. It is unclear how these various statutes relate to each other and whether the goals of one statute trump the goals of another. These regulatory challenges are further compounded by political realities, such as lobbying and public and media campaigns. In the U.S., the Marine Mammal Protection Act further complicates solution building (see Chapter 3.1.2.0).
Dependency on ecological science as the answer	The process attempted to date has heavily emphasized ecological science without addressing the role of the human social dynamics. Stakeholders find more comfort in science as a solution and as a means for a common dialogue. While the science is very important, and should be pursued, this approach largely ignores the issues of social values, equity, and justice that made the problem wicked to begin with. Further, groups often disagree on what the science is showing, and this leads to increased conflict.

Diversified stakeholder interests and influence of group identity conflict	The diversity of stakeholder groups and the highly technical nature of this issue make for very complex relationships between parties. Further, the history of conflict and resulting distrustful relationships has risen to the level of group identity conflict. Identity conflict is where parties make assumptions and hold prejudices about others based on their group affiliation. Trust is low among these parties. People assume that an individual from another group will act or think a certain way and there is little hope for change (Madden and McQuinn, 2014). This is further reinforced by the fact that groups have actually established firm public positions as a response to years of conflict and frustration. Such a cycle of conflict will continue unless actions are taken to build the capacity of stakeholders to see past the established positions and affiliations, learn to communicate openly and uncover common ground where they may exist (Fisher et al. 1991; Lederach 2003; Madden and McQuinn 2014). Identity issues are fundamental to conflict but yet are rarely explicitly addressed . Transforming this conflict out of the identity-based level is the central and key step to taming the wickedness of the issue.
Decision-making approaches that only increase conflict and intractability	In the U.S., and likely many other areas in the world, the federal government has largely served as the nexus for all stakeholder groups on this issue. The government is where the overarching policy and individual permitting decisions are made. However, for a variety of reasons (mainly lack of staff and financial resources), the U.S. federal government has not yet built a decision-making process that can make this issue tamer.

Table 4.5 Reasons why government decision processes add to intractability

Process is too linear	The federal decision process primarily uses a linear approach that oversimplifies a complex issue, fragments the larger issue into many smaller pieces and leaves no room for an overarching holistic vision. Instead, complexity requires a greater need for study and analysis.
Timing more important than quality	Timing rather than quality becomes the essence of the decision. This focuses the agency on the immediate need and not the longer-term strategy. There is little room for strategic planning and creative decision alternatives.
Process emphasizes ecological science and ignores social dynamics	Many stakeholders feel that ecological science will provide the answer on intractable environmental issues, especially highly technical issues. Stakeholders find more comfort in science as a means to solution and discussion. Science will help inform key issues, but it will not solve the issue because it leaves out issues of social values, equity, and justice that made the problem wicked to begin with. Agencies need to develop new ways to use science *and* issues of social values and equity to inform decisions.
Parties not part of decision-making	Environmental laws require transparency but do not go as far as engaging stakeholders in making decisions. This generates tactics by stakeholders to gain power over decision-making (e.g., lobbying, litigation).
Process fails to fully understand and transform conflict	Process fails to address the heart of the issue—the need to transform conflict into effective action. Decision-making processes cannot produce effective solutions in situations where conflicting goals, identities and values predominate. Addressing the conflict is therefore the most important action that can be taken. It is also the most difficult to implement.

(b) Key results from Chapter 2 (Group Identity and Intra-Group Conflict)

Chapter 2 described identity as a fundamental human need and a key issue in many intractable environmental problems. It provided an in-depth look at identity for seven of the most active stakeholder groups on this issue. This included how each group identifies itself, their top interests, needs and improved outcomes, and tactics they perceive as either positive (decreasing conflict) or negative (increasing conflict). It also covered aspects of *intra*-group conflict that may make resolution more challenging (i.e., when group members have conflict with one another or rules of a group limit flexibility for creative solutions).

It is important in any future collaborative, transformative effort to raise awareness among all involved about how each group identifies themselves, their fundamental needs, what is most important to them on the marine sound issue, and where they see potential solutions. It is also essential to understand which tactics each group perceives as positive and negative, as these are key to increasing or decreasing conflict. Table 4.6 summarizes key areas of group identity and intra-group conflict. Figures 2.1-2.7 in Chapter 2 provide additional detail.

Table 4.6 Summary of themes on group identity and intra-group conflicts

Academic (impact)	Desire to reduce scientific uncertainty Desire to have regulations better informed by science Not holding back in order to maintain research funding Protecting professional credibility and sticking to positions Adversity to exaggerations of information Perceived bias (by some) on taking funding from sound producers Can I be a scientist and an advocate?
Academic (geo)	Need to promote value of science produced Desire to disassociate from oil and gas Concerns regulatory process will stop scientific progress Many group members still naïve about marine sound issue
eNGO	Level the playing field (power imbalance) Increasing power through public campaigns Differing end goals among group member organizations Other groups do not listen and assume all eNGOs are radical Gladiator vs compromiser Competition for membership and public attention The one leader approach
Government (federal)	Battling public perceptions and building a better process Power imbalances among agencies Desire to be more proactive and find balance Differing relationships among agencies Challenges within your own agency Challenges with openness in public situations
Navy (U.S.)	Have made progress Unfairly characterized by eNGOs despite progress Need to change costly and timely compliance process Need to control the message
Oil and Gas	Great need for predictability Culture of problemd solving Desire to better understand (both science and regulations) Need for respect and credibility Differing levels of attention across companies Conflicts between E&P and Geo Cos Environmental role in a for profit company
Shipping	Great need for predictability Shippers vs. ship builders Mixed involvement within industry Competing environmental issues No hammer to push solution Separate intentional vs. unintentional sound

(c) Key results of Chapter 3 (Inter-group Conflict)

Chapter 3 described sources of inter-group conflict (e.g., conflict between separate groups). Particular attention should be paid to the tables in Chapter 3 as they compare/contrast these data findings across groups and contain highly valuable information in understanding where common needs exist and differ and how group actions may affect other groups (positively or negatively). Figure 4.2 provides key messages from the data results in Chapter 3, including a summary of the top interests/needs, tactics and improved outcomes across all groups and reinforces how tactics can strengthen or weaken the ability to connect interests/needs with outcomes.

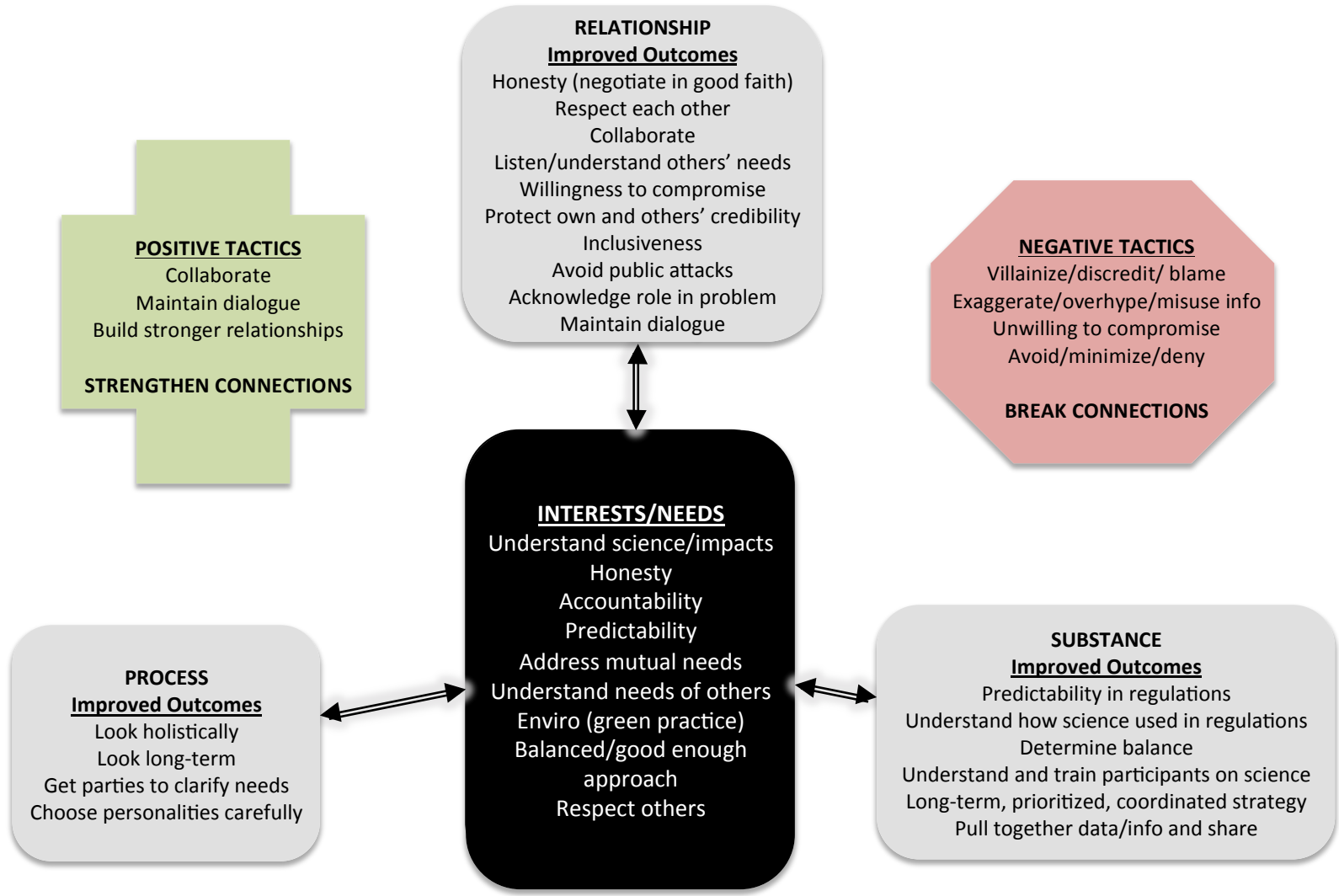


Figure 4.3 Top interests/needs, improved outcomes and tactics across groups

- Data revealed a sense that all parties, in some way or another, are receiving financial security by this issue remaining intractable. Results were unclear on as to what degree this was a factor, but nonetheless it should be openly addressed in any future collaborative effort.
- Development of respect, in thought and action, is a key factor in any human relationship and clearly needs to be addressed in to make progress in making this issue more tractable.
- There were mixed results on three other topics, and these should be openly addressed in any future collaborative effort.
    - perception that some eNGOs may be using the marine sound issue as a way to stop a larger activity that causes them greater concern (e.g., stop seismic noise from surveys so prevent future development of fossil fuels)
    - overall value of litigation
    - complicating factor of the U.S. Marine Mammal Protection Act and whether or not changes need to be made so the regulatory structure can more effectively manage marine sound issues.

Section 4.04 Recommendations for next steps

There are countless recommendations that could be given in terms of the breadth and depth of this issue and findings from the research data. The steps below are meant to highlight the broader actions to be taken to determine if a collaborative, transformative effort will be pursued and then developing a more specific plan to achieve it.

Importantly, any actions to plan such an effort should be done in concert with affected stakeholders as participation in the development of the approach will go a long way in supporting its success.

(a) Review detailed data results

In order to truly gain an understanding on the conflict surrounding the marine mammals and sound issue and the reasoning for recommending a collaborative, transformative approach, readers should absorb all chapters and appendices within this dissertation. Although this chapter provides a summary, it is not as meaningful unless all other material has been read and contemplated. In addition, there were many more points raised by participants during the research that were not directly included in the discussion, mainly given their lower response rates. In order to see the full scope of items and issues raised, it is therefore important to review the codebook in Appendix C as this ultimately contains all responses from all participants regardless of the degree of response.

(b) Hire conflict transformation expertise

The steering committee (see no. 3 below) should collectively select one or more experts in conflict transformation to assist long-term on this effort. These experts should work first with the steering committee to build relationships and capacity to problem-solve among committee members. Once that is accomplished, they should work with the committee to help design, build and implement a collaborative, transformative effort with the larger group. Further, this expertise should be maintained until the point where enough capacity is built within the group to handle conflict constructively.

(c) Establish a steering committee

Any worthwhile effort will falter without continued leadership and direction. It is highly recommended that a steering committee be constructed, with this committee being comprised of a representative from each relevant stakeholder group. The goals of the committee would be to develop the process for, and subsequently, guide any collaborative, transformative effort in the long-term. Together, they would create the vision and structure, establish the adaptability of the effort, measure its successes and failures and serve as the liaison between the committee and the stakeholder group they represent. They would also determine how to fund the overall effort while ensuring that all parties have equal opportunity to participate.

Importantly, this group would also consider and determine when and how to engage the international community, such as established inter-governmental groups like the Underwater Noise Task Force under the European Union's Marine Strategy Framework Directive. There are many common needs regardless of where events occur, and the steering committee should streamline resources and efforts to meet these needs.

In addition, the committee should work with the conflict transformation experts to plan committee specific meetings and events, some of which are geared solely at team building (e.g., weekend before team building exercises, social events). Some of the best opportunities to develop relationships and access creative problem-solving happen during the informal times, such as coffee breaks at conferences, the bar after the meeting ends, even group activities (sightseeing, mini-golf anyone?). Although much of the committee time will be spent rolling up sleeves and working through tough issues, it is important to

maintain informal interactions so that group members can see each other as a team working toward a goal rather than as opponents.

- The size of the group will be dependent on the scope of the issue (i.e., across all sound areas or just focused on one type of sound), but attempts should be made to keep group size at or below ten people.
- These individuals should serve long-term in this capacity in order to avoid too much turnover at such a critical level. They also need to devote sufficient time to the effort. It is important that these individuals have the support of their management and organization to serve in this role.
- Each stakeholder group should select their own member of the committee but care should be taken to ensure the individual selected can serve well in this capacity and believes in its value (or at least believes in attempting to determine its value). *This is extremely important.* Choosing the wrong personality at this stage would undermine the effort.

  About 70% of participants spontaneously emphasized the need to choose personalities carefully. This was also reinforced by some 2004-2005 U.S. Marine Mammals and Noise Federal Advisory Committee members who felt the FAC had too many inflammatory people on the committee.

  There is no recipe for the right personality, but it largely means individuals who are willing and have the capacity to work well with others, even when goals and values conflict. It requires open-mindedness and a desire to problem solve. It means actively listening to understand the needs of others

(versus listening just to get a chance to talk) and also a willingness to be open about their group's interests and needs (versus just positions). At the same time, these individuals need to be comfortable in politely, but firmly, holding the line on what is truly non-negotiable for their group. Participants from this study also noted the following characteristics in thinking about the right personality for a collaborative effort: can work 'across the aisle,' consistently reasonable, non-threatening, non-argumentative, straight shooting, respectful of others, honest and willing to listen. These individuals, above all others, must play well in the sandbox. They must set the example for others to follow.

- These individuals would also serve as 'ambassadors' to their respective stakeholder group, raising issues with the committee that the group would like to pursue and vice versa. Many, but not all, of the individuals and organizations involved on this issue have already built alliances (groups) that share common concerns and values. For example, the U.S. government has a sound and marine life Interagency Working Group, oil and gas have two trade associations as well as several research groups, eNGOs have built alliances on this issue (although the structure of communication is unclear), and there is even a marine sound sub-group under the World Ocean Council (a cross-sectoral industry leadership alliance on corporate ocean responsibility, see http://www.oceancouncil.org/site/). All of these groups and sub-groups allow safe space for like-minded individuals to discuss the issue without the constraints multi-stakeholder processes might

bring. These groups can then work through their steering committee member, and vice versa, to relay issues of concern.

(d) Look at analogs

Part of the data collection included asking participants to identify 'analogs,' essentially other collaborative efforts they have been involved in or aware of and what they considered productive or counter-productive about the structure of these efforts. These could be related or not to the marine mammals and sound issue. This resulted in the identification of approximately 40 analogs. Data on analogs should be reviewed, further vetted with external information about these structures and relevant information used to inform the development of any future collaborative, transformative effort on marine mammals and sound.

(e) Determine scope

Although many participants recommended needing to take a holistic approach in a future effort, there was mixed feedback on what this meant. Although the scope of the effort could be designed in many ways, the following options warrant greatest consideration. Some, or part of these, were recommended directly by participants while others are a consolidation of the researcher's deliberations on potential options.

- Address the issue in its entirety, including all relevant stakeholders across all sound types. This would include the addition of groups not included in this research, such as tribal and state governments, other federal agencies, contractors, and other sound producers (e.g., offshore construction, dredging, commercial

fishing). The magnitude of such an effort would be the greatest of the four options although the most holistic.

- Address the issue with only the seven key stakeholder groups studied in this research. This would be a smaller scope, but it is still unknown whether all groups are willing to work together. This would need to be vetted prior to starting any effort. Here, the magnitude of the effort would be quite large but also more holistic.
- Separate out intentional (e.g., seismic surveys, navy sonar) and unintentional (shipping noise) sound sources for distinct efforts. Two participants recommended this option. From a U.S. perspective, this may make sense given the regulatory structure is different for intentional sound producers (who are regulated under the Endangered Species Act, Marine Mammal Protection Act and others) than unintentional (who are unregulated by the U.S. government, insofar as marine sound is concerned). Further, participants supporting this effort noted that the solutions and circumstances for one category are different than the other. This option would include all relevant stakeholders but would occur in two separate processes operating concurrently. Where appropriate, overlap in the processes could be integrated so common information or actions could be handled in one effort but used in both processes (i.e., convene scientific experts to establish state of science across all sound types and then both processes use that information or workshops covering

common needs could be jointly held). This approach could potentially meet the needs of option (a). There would the same magnitude of effort and holistic approach but the process could be divided into two large but perhaps more manageable pieces.

- Focus a starting (pilot) effort around a smaller group. For example, this project could focus on one type of noise (e.g., sonar, seismic airguns, vessel noise), one sound producer (e.g., Oil and Gas, Shipping, Academic (Geos) or even a mix (e.g., seismic airguns but with Oil and Gas and Academic (Geos)) and/or one geographic area. The number of involved parties would shrink to some extent, and the focal topic would also condense to a more manageable size. Although not as holistic as the other options, this approach may allow for a smaller and manageable group size and topical area. Results of this pilot effort could then inform and start additional efforts on other topics and/or lead to the expansion of the pilot effort to include other stakeholders and sound type issues.

(f) Determine willingness to participate and willingness to compromise

Most interviewees (72%) did indicate a willingness to participate when directly asked although this cannot be known for sure until a collaborative, transformative effort is started. However, even if they are willing to participate, they also have to be willing to consider compromise. If the situation exists where needs between any groups outright conflict to a non-negotiable point then a collaborative effort is likely not going to work for those individuals or groups. Very importantly, the challenge here is to avoid coming

to that conclusion prematurely before the dialogue has advanced enough to discover where negotiation is and is not possible.

(g) Decide whether to integrate or separate of science and policy

A small number of participants recommended that the science and policy discussions occur separately with results being combined at a later point. The primary reason was to allow for a more technical discussion with only parties possessing the same level or depth of technical expertise (whether this is related to science or policy). This is something the steering committee should contemplate and decide together.

(h) Find a forum outside of government

A collaborative, transformative effort needs to be adaptable, creative and flexible—something hard for government processes to do. On one hand, the government can represent 'neutral' grounds of sorts to all other parties and would seem a logical nexus. On the other hand, government is mired in process and even the best intentions can be shackled by rules of behavior (e.g., Federal Advisory Committee Act) as well as restrictions on how funding can be used or long lag times in securing funding and resources. Government should devote time and resources (including financial) to the effort, but the creativity and adaptability a collaborative, transformative effort demands needs to derive from a forum outside of government.

Section 4.05 Is it worth the time and cost?

Developing and implementing a collaborative, transformative approach will no doubt cost time and money but so do failed linear decision processes, indecisions (or poor decisions) and litigation (Ewel, 2001; Smith and McDonough, 2001: Irvin and Stansbury, 2004; IECR, 2005; Agranoff, 2006). Other costs include redoing lengthy and costly environmental analyses, missed opportunities for public and private investments from untimely decisions, deepening antagonism and hostility among stakeholders, and costly impacts to natural resources as protective actions are stymied by an inability to act on decisions.

There is also a substantial cost from litigation associated with intractable issues. For example, a 2011 Government Accountability Office report found that the Department of Justice annually defends about 155 lawsuits against the U.S. Environmental Protection Agency alone (fiscal years 1995 to 2010). The costs borne by the government to defend these cases averaged $3.3 million annually for a total of $43 million (fiscal year 1998 to 2010). In addition, costs to settle cases (i.e., to avoid going to court) cost the government an additional $3.2 million annually (fiscal years 2006-2010) (GAO, 2011).

Evidence from this research indicated litigation as a last resort tactic by all, including eNGOs. All who commented recognized that the money spent from litigation could be repurposed for more important needs (e.g., scientific research, collaborative efforts, workshops). Undoubtedly, all stakeholder groups involved on the marine mammals and sound issue are experiencing costs of their own, such as those associated

with environmental documentation, not being able to conduct activities (sometimes at the last minute after costly resources are mobilized) or even those incurred by eNGOs if they lose in litigation.

A transformative approach should be considered as a long-term investment where benefits will ultimately outweigh costs. Benefits include social learning, gains in social capital, empowering groups to work together in the long-term, and the probability of more effective and sustainable decisions (Rock and Cox, 2012). It also includes the ability of the group to problem-solve constructively, thus adding to the predictability and consistency in decisions that so many stakeholders on this issue need.

Some groups may be reluctant to allow other interested parties to be part of their decision-making processes. There may be fears of losing control, untimely decisions or having provided information used against you. There may be a perception that there is little hope that interested parties would be able to reach acceptable decisions together. Stakeholder groups may feel they do not have the time or resources to move toward new approaches that involve the level of effort needed to address the conflict. There may also be a wariness of how such a process can fit into a regulatory environment where timely decisions are needed or where the government is mandated by law to make the decision. However, a process can be designed within the directives and frameworks of the specific statutory requirements. Larger decisions can be broken down into phases with agreed upon time frames. Short-term needs can be addressed while building a longer-term vision. Every instance of working together to problem solve, no matter how small the effort may be, in turn, builds the capacity of the group to collaborate more

effectively and develop larger, longer-term strategies for dealing with future problems and continuing cycles of conflict. In fact, such a process can actually *buy* time to reach a more effective overall end point. Research shows that when interested parties are part of working toward a solution, they are more willing to accept short-term decisions if they are engaged in reaching longer-term, more sustainable solutions (Tyler, 1998: Gangl, 2003; Heuer et al., 2007; Reed et al., 2008; Weber et al., 2008).

CONCLUSIONS

Ultimately, the wickedness of an issue is not about the science, nor will the science ever tame the issue on its own. Rather, the issue is intractable because of the conflict *between* people about the most appropriate path forward. It is then imperative to understand, address, and transform this conflict in order to move off the decision carousel and toward improved outcomes and sustainable decisions. This research provides that rigorous analysis from which stakeholders can better understand the context and reasoning behind the conflict and open minds to working together to build a more sustainable process (or at least attempt to do so).

Any new process will require a paradigm shift that moves away from shorter-term, science-driven, linear processes to longer-term, holistic, iterative and adaptive approaches. Such a change will also require stakeholders to step out of their 'technical' comfort zones, address the conflict openly in a productive manner and collaboratively develop the capacity to deal with both immediate and long-term aspects of the issue.

It may seem too ambitious, costly or unrealistic to pursue such a change. Costs may seem too high and time too short. Stakeholders may be wary about openly addressing conflict or believe that certain groups are just unwilling to improve outcomes. However, 90% of participants agreed during this research that the current situation is undesirable. Given the history of conflict on the marine mammals and sound issue, it is unlikely the situation will change on its own. So, it comes down to two choices. We can live with the conflict as it stands now, including its limited attempts at collaboration, focus on self-protection and efforts to outcompete and outmaneuver opponents. Or we can try something new that is based on proven theories in social science and human social behavior. It is time to make a change.

> "*As is typical in disputes where positions have already been staked out and opposition has been identified, most participants entered into the process with a great deal of skepticism about its potential and convinced that their main task was to advocate for their views. It was only in the process of seeking information and exchanging views that members came to realize how much they were learning, and how much they needed to learn, and how valuable it was to engage people with different views and experiences. It was the attitude toward learning that changed and needed to change*."
>
> (*Reaching for Higher Ground*; Dukes et al., 2008; page 69)

Appendices

Appendix A	Methodology
Appendix B	Questions and Information Needs Pursued during Interviews
Appendix C	Final Code Book
Appendix D	Recommendations from Caucuses of the 2004-2005 Marine Mammals and Noise Federal Advisory Committee
Appendix E	Comparison of How Groups Perceive Themselves and Each Other; How Groups Perceive the Influence of Other Groups
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Appendix A
Methodology

Overarching Starting Theory

Wicked Environmental Problems (WEPs) are not a conflict between people and the environment but a conflict between people *about* the environment. More traditional, linear federal decision making processes on WEPs are bound to fail given they avoid understanding, addressing and transforming conflict. Conflict continues and decisions are inevitably revisited through failed outcomes and litigation. Instead, federal decisions and outcomes on WEPs would be more effective (in the long-term) if agencies implemented deliberative, iterative, adaptive and collaborative decision-making *based on a foundation of transforming the conflict*.

Refined Theory

Participants largely consider the current state of the issue as undesirable. The issue has been immersed in identity conflict for an extended period of time necessitating a need for a transformative approach, one that builds relationships and breaks barriers created by identity conflict. However, the conflict must first be understood at a much greater contextual level to uncover the underlying stakeholder interests, perceptions of the issue, ideas for improved outcomes and how conflict between groups affects the course of progress. Such an understanding can best be achieved through a robust, qualitative investigation (versus ongoing dialogue or quantitative (e.g., survey) approaches). Further, a collaborative transformative approach is needed that builds effective relationships as a means to improve outcomes and stakeholder satisfaction on the marine sound issue.

Figure A.1 Starting and refined theories

The selected case study involves the effects of anthropogenic sound on marine mammals and the associated human conflict. Case study methodology allows researchers to explore or describe an issue in context. More specifically, the explanatory case study strategy employed here involved the development of a provisional theory that was then tested in research (Stake, 1995; Yin, 2003; Baxter and Jack, 2006). It used several data collection techniques, including a document review, semi-structured interviews with stakeholders and participant review of selected analyses. By combining several techniques, data were triangulated so that the theories, questions and analyses were tested from multiple facets thus adding rigor to the results (Patton, 1990; Yin, 2003).

Document Review and Analysis

Over 230 publicly available documents were reviewed. Documents were located primarily via journal and web searches, including reviewing websites of identified stakeholders. Documents included, but were not limited to, major federal reports, technical documents, statutory amendments, litigation, public reports issued by stakeholders, press releases and other documents.

After a document was located, it was reviewed to first determine whether its content was applicable to understanding: (1) what these individuals/groups were saying publicly about the case study topic over time (e.g., positions) and (2) indications of where certain groups/individuals were in conflict with each other. If the document touched on these topics, it was then moved and stored in an electronic folder for further analysis. If a document was considered irrelevant to the criteria identified above, then it was moved to

a different electronic folder and not further analyzed. With a few exceptions, any document that did not reveal any aspects of underlying conflict was excluded from further analysis (e.g., the document was purely scientific or strictly regulatory in nature).

All documents stored for further analysis were again reviewed and the data points noted below were collected using a Filemaker Pro database developed for this project.

- Publication date (month and year)
- Title
- Citation
- Document Type (report (federal, eNGO, general), regulation, workshop (federal, non-federal, 2004/2005 FACA), miscellaneous, journal article, grey literature, international agreement/report, litigation, legislative, position statement/resolution)
- Authors and affiliations
- Stakeholder groups producing publication (Federal (all, military, non-military), tribal, other government (state, international), industry (general, contracting, dredging, energy, geophysical, commercial fishing, commercial shipping), environmental NGO, non-environmental NGO, university (academia), research organization, scientific experts, media)
- Summary
- Outcomes
- Researcher notes
- Focus (whether science, policy, mix)

- Key stated positions within document

The data collected from the document review were used to: (1) develop a list of individuals for interviewing, (2) develop a list of stakeholder group categories, (3) compare stated positions of stakeholder groups, and (4) gain an initial understanding of the level of emphasis on and the status of 'relationships,' at least as described in public documents produced by stakeholders.

Semi-Structured Interviews

Interviews provide an anonymity, level of comfort and time to allow individuals to move from their more rigid public stances to more individual perspectives and self-thinking (Berg, 2009; Angrosino, 2010). Semi-structured interviews were specifically selected given their ability to allow interested parties more opportunity and time to explicitly and thoroughly state their perspectives in a one-on-one, private situation (versus a quantitative survey or structured interview). These types of interviews are essentially a 'discussion with a purpose' where researchers can explore specific questions or information needs but the direction, depth of the response and ability to raise additional issues are at the discretion of the interviewee. The use of this interview type aligned well with the overall purpose of the research which was to rigorously investigate and truly understand the full context and reasoning behind the conflict. This level of input can only be achieved by allowing participants to largely drive the direction of the conversation and point the researcher to the information the interviewee feels is most relevant.

- **Selection of participants**

Interviewees were selected from results of the document review phase as well as the researcher's professional knowledge of individuals involved on the marine mammals and sound issue. The document review identified a total of 219 individuals, 253 organizations comprising 18 stakeholder groups and 455 stated positions. Identified stakeholder groups included federal and state agencies, tribal governments, military, industries (e.g., traditional and renewable energy, mining, construction, shipping, recreation (whale watching, boating), fishing), non-governmental organizations (mainly environmental) and research/academia. Given the sheer numbers of individuals and groups identified, and to make the data collection and analysis more manageable and robust, potential participants were further narrowed to only those associated with key stakeholder groups actively engaged on this issue presently and over time. This resulted in 74 individuals.

The list was then narrowed to only those individuals heavily engaged on the case study topic consistently for a period of two or more years (i.e., they have been sufficiently engaged to be knowledgeable of topic, the conflict and other stakeholders). An individual's identity with any specific stakeholder group was also considered in order to achieve a fair representation from all groups. Group affiliation was indicated by current and past employment, associated presence in document review with specific groupings, and researcher knowledge of the individual (where possible). This resulted in a list of 48 individuals.

Interviews started with this list of 48 individuals. However, these 48 participants were also asked to identify individuals for interviews. Most participants recommended individuals already identified on the researcher list although 17 additional individuals were identified bringing the final list to 65 individuals.

- **Participation rates, data inclusions decisions and potential bias**

Out of the 65 individuals contacted for interviews, 2 outright declined and five did not respond leaving 58 interviews conducted in total (89% response rate). Of the declines and nonresponses, 6 of the 7 were from the commercial shipping industry. This lack of response from the commercial shipping industry is likely the result of a combination of factors, including: (1) the general lack of interest or focus on the case study topic from individual companies within the industry; and (2) the commercial shipping companies lack of familiarity with the researcher. The latter was supported by exceedingly high response rates from other industries where the researcher already had an existing relationship. Therefore, a lack of prior interaction with commercial shipping companies did appear to limit opportunities for interviews. In addition, of the two shipping entities interviewed both expressed a likely lack of response from shipping companies given the companies' general lack of focus on this topic (despite commercial shipping being a large contributor to anthropogenic noise levels in the ocean).

The low sample sixe for commercial shipping (two individuals) likely biased the results of that group. Consideration was given as to whether or not to include interview data from these two individuals in the data analyses and reporting of results. In the end, it was decided that inclusion of information from these individuals was necessary given

the important role commercial shipping plays in the marine mammals and sound issue and that the individuals interviewed were the only ones actively engaged on the issue (as evidenced in the document review, research professional knowledge and the interviewees responses).

Except for shipping, all other groups were interviewed until there was a reasonable level of consistency in responses among group members. Table A.1 provides an overview of the number of interviewees for each group.

Table A.1 Number of interviewees per stakeholder group

Stakeholder Group	No. Individuals	Notes
Academic (impacts)	7	7 different universities or research organizations conducting research to assess impacts of marine sound on marine mammals
Academic (geo)	3	2 different institutions using noise to study the environment (e.g., earthquake research, ocean mapping)
eNGO	8	5 different organizations
Government (federal)	14	NOAA (5 people) U.S. Marine Mammal Commission (2 people) 6 other government agencies (Bureau of Ocean Energy Management, Bureau of Safety and Environmental Enforcement, Department of State, NOAA Sanctuaries, U.S. Coast Guard, and U.S. Fish and Wildlife Service) (7 people)
Oil and Gas Exploration & Production Geophysical Surveying	12	4 Exploration & Production companies 3 Geophysical contracting companies
Commercial shipping	2	2 organizations
U.S. Navy	8	7 Navy departments
Cross over	4	1 w/ multi-industry experience 1 w/ academic (impact) & contractor exp 1 w/ academic (impact) & eNGO 1 w/ academic (impact) & oil/gas exp
	58 total	**42 different entities total**

Despite initial indications (and thus their placement on the interviewee list) 4 of the 58 individuals could not readily or justifiably be categorized into any one stakeholder group. This was largely given their interview data revealed significant professional experience in more than one category, enough so that their identity did not appear to be tied to one specific category (and conversely, the identity of others in a specific category did not appear to sufficiently relate). For example, one individual worked across multiple industries over time. These four individuals were ultimately separated into their own category (i.e., not folded into a group), and their data were not included in the stakeholder group analyses described in Chapters 2 and 3.

- **Format of interviews**

After obtaining prior written approval from the participant, interviews took place during March to July of 2014 in the preferred setting by the participant. Of the 58 interviews, 15 were conducted by in person, 40 by phone and 3 by Skype. The shortest interview was 40 minutes and the longest 174 minutes for an average mean interview time of 70 minutes. The total interview time for all 58 interviews was 4,068 minutes or 68 hours. For each interview, information was collated on the date, mode (in person, skype, phone), length of interview and current/past group affiliations (if known). Interviews were taped using a digital handheld recorder, anonymously coded and stored in a password protected Cloud drive and backed up in a protected external hard drive. Appendix B provides the general questions and information sought during these interviews.

Data Organization and Analysis

- **Coding of interview data**

Coding of interview data was conducted using categorization methods. Categorizing strategies are more structured approaches that allow generalized data and comparability among individuals (participants) and help elucidate the similarities and differences among people (Maxwell, 2013). Specifically, this strategy looks for patterns (similarities, differences, frequency, sequence, correspondence (happen in relation to other activities or events) and causation (one appears to cause another)) (Maxwell and Miller, 2008). This approach ultimately allowed for, in the data analysis, an understanding of the degree of which individuals and groups shared similar perceptions or where differences occurred. It also helped highlight similarities and differences within groups that led to a greater understanding of identity level conflict existing within and between groups.

Appendix C contains the final codebook. In total, 1,357 individual substantive codes were used across the 58 interviews with an end total of 15,259 coded segments. Such a large amount of coding required substantial organizational/theoretical coding, including 11 larger coding categories, such as Interest/Needs, Identity, Perceptions (Stakeholder), Tactics, Collaboration, Analogs, Progress, Key Events, FACA and General, and substantive codes nested within these categories. Further, given the extent of interview data, the MaxQDA (version 11.2) software program was used for coding versus more traditional hand coding methods.

Prior to coding the researcher developed a conceptual framework for codes based on the researcher's familiarity with the case study topic as well as the interview questions and information being sought. However, coding was largely "open coding," meaning that, while the researcher had a starting sense of codes, the substantial amount of code development occurred during the actual coding (Glaser and Strauss, 1967). Codes were, therefore, readjusted uncountable times until the codes being used were applicable and consistent across all interviews. All substantive codes reflected the statements of the respondents and all coded segments were direct quotes so as to avoid any unintentional re-interpretation of the data by the researcher.

- **Memoing**

Memoing was used regularly during the data analysis process as a means to capture larger and more significant potential findings. For example, each interview had an accompanying memo that captured important quotes and also researcher reflections on the interviewee's role, actions and preferences. Another 'researcher identity' memo was developed to reflect any starting researcher biases for comparison against and a more thoughtful validity check of the final results at a later point. In addition, one overarching memo was populated moving through the data analysis that captured researcher thoughts or consideration of linkages in information as they occurred. This 'connecting strategy' approach allowed provided another vehicle for looking broadly at the collective data to discover the contextual understanding of the results, how events and people are connected and uncover causality behind the phenomena (Maxwell, 2013).

Exploratory Interviews with Conflict Experts

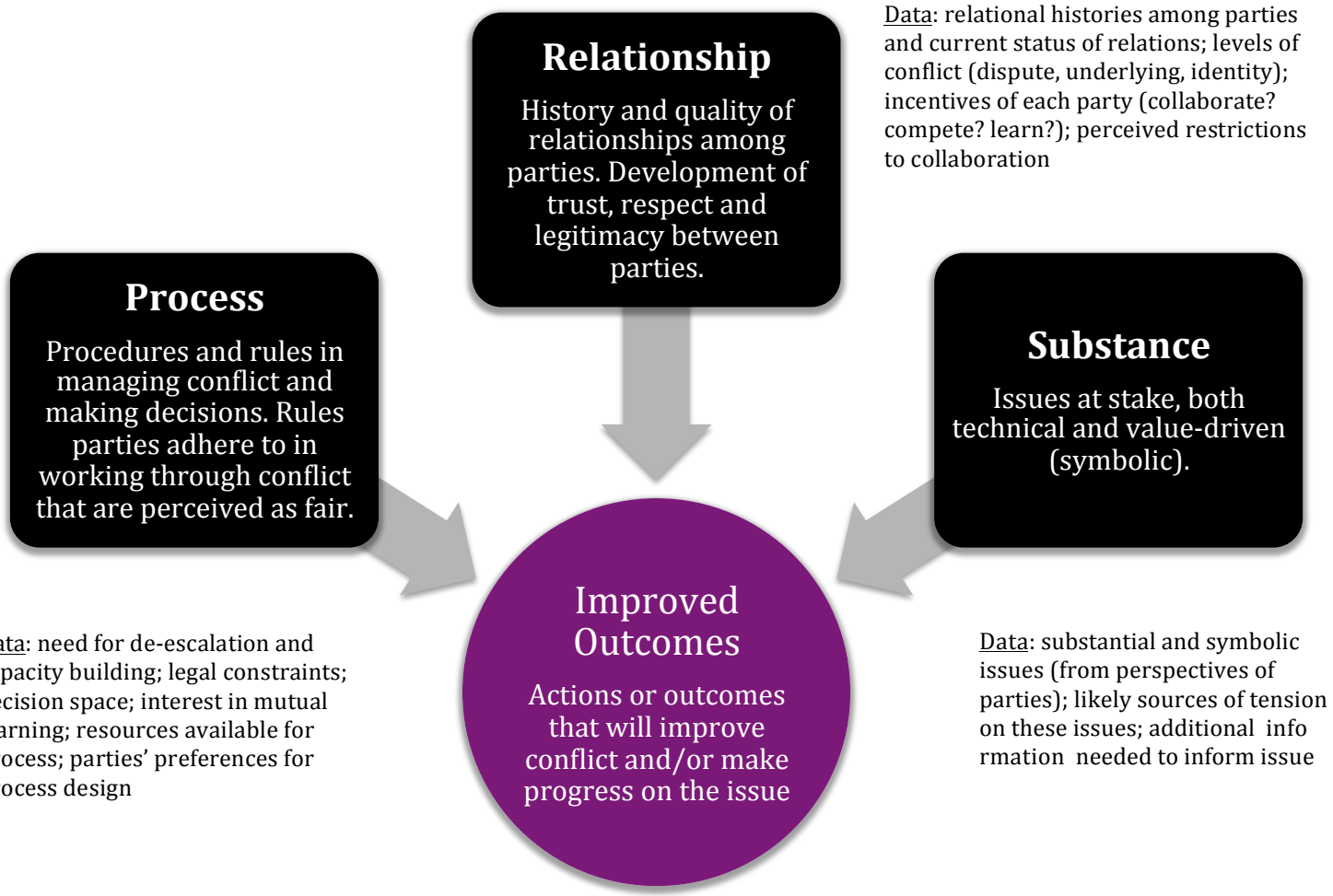
Informal, exploratory interviews were conducted with 10 experts in conflict resolution and/or transformation to solicit input and guidance on: conflict transformation trends, tools, methods, processes, benefits, challenges and potential drawbacks. These interviews were used to guide and inform future phases of the research

Application of Conflict Satisfaction Triangle to Test Role of Relationship

The "Triangle of Satisfaction" is a common tool used by conflict transformation practitioners to describe the three interrelated dimensions where progress across each will result in tangible improvements in a conflict situation. These include process, relationship and substance (Moore, 2003; Furlong, 2005).

In order to test the relationship aspect, the Conflict Satisfaction Triangle was adapted for use in this research (see Figure A.1). During the interviews and data analyses, specific attention was paid to understanding the value each participant placed on the role of relationship among stakeholders from two perspectives: (1) how relationship has influenced the conflict to date (positively or negatively) and (2) the importance of relationship, in comparison to process and substance, in progressing this issue (i.e., reaching the interviewee's identified improved outcomes) in any future collaborative effort. This information was gathered through direct questions as well as indirect responses provided during the interviews. This included sharing a simpler version of Figure A.1 with the participants (i.e., without the info needed text boxes), a short explanation of each category, a reinforcement that all were important for progress

on the conflict and then asking whether the participant felt any of the three needed more emphasis than others in order to meet their defined improved outcomes. It was also assessed through analysis of the tactics and identified improved outcomes that lent considerable light on the more unconscious or indirect role of relationship.


Relationship
History and quality of relationships among parties. Development of trust, respect and legitimacy between parties.
Data: relational histories among parties and current status of relations; levels of conflict (dispute, underlying, identity); incentives of each party (collaborate? compete? learn?); perceived restrictions to collaboration
Process
Procedures and rules in managing conflict and making decisions. Rules parties adhere to in working through conflict that are perceived as fair.
Substance
Issues at stake, both technical and value-driven (symbolic).
Improved Outcomes
Actions or outcomes that will improve conflict and/or make progress on the issue
Data: need for de-escalation and capacity building; legal constraints; decision space; interest in mutual learning; resources available for process; parties' preferences for process design
Data: substantial and symbolic issues (from perspectives of parties); likely sources of tension on these issues; additional info rmation needed to inform issue

Data Comparison through Mixed Methodology

In order to work with the large amount of coded data segments, a mixed methodology approach was used to present results both quantitatively (e.g., through % of response to certain codes) and qualitatively (e.g., reinforced with direct quotes from the interview data).

To begin with, data were analyzed in the organizational coding categories noted below. From a quantitative perspective, each substantive code was reviewed to tabulate the number of individuals responding to that specific code from each group. Then, separate tables were developed for each group to show substantive codes garnering ≥ 50% of individual responses from that group. (The exception was for shipping where 100% of individual response from the group was needed given the inadequate sample size.) This helped develop the descriptions of group identity in Chapters 2 and 3. Next, these results from all of the groups were formed into one table to reflect the similarities and differences across groups in regards to interests and/or needs, improved outcomes and perceptions of tactics. Qualitatively, direct quotes were used from the substantive codes to illustrate the quantitative data.

- **Interests/Needs**: The "why" behind a participant's stated position (the "what"). Data analysis resulted in approximately 70 substantive codes that were categorized into eleven organizational codes.
- **Identity**: Captured substantive codes that more directly reflected evidence of identity conflict. There were approximately 25 codes in this category. These data were used qualitatively to provide direct quotes to support data discussions.

- **Perceptions (Stakeholder)**: Captured perceptions of goals, motivations, purposes of others as well as their own group. There were hundreds of substantive codes in this category. These data were used primarily qualitatively to provide direct quotes to support data discussions in Chapters 2-4.
- **Tactics**: Used to describe which tactics individuals and groups perceived as negative and which as positive. Included four organizational codes and approximately 130 substantive codes. Additional focus was placed on litigation as a tactic given the central role it plays in the U.S. on the marine mammals and sound issue. Qualitatively, direct quotes were used from the substantive codes to illustrate the quantitative data.
- **Collaboration**: This was used to capture participant interest and thoughts of success or failure with a future collaborative effort as well as participant identified improved outcomes. Improved outcomes were divided into three organizational codes to correspond with the Conflict Satisfaction Triangle (process, relationship and substance). More than 100 substantive codes were captured..
- **FACA**: This included participant responses as to the success or failure of the largest collaborative effort to date on this issue (2004-2005 Marine Mammals and Noise Federal Advisory Committee). Only participants having participated in this FAC were coded. Results indicated participants largely considered the FAC to be a failure. Chapter 1 describes the main reasons participants felt the effort failed.
- Additional organizational categories were developed to cover Analogs (other collaborative processes identified by participants), Progress (where participants

saw progress on the issue), Key Events (any reflections on past events participants considered important to the issue), and General (captured other information not covered under other codes, such as potential researcher bias).

Perspectives on the Marine Mammal Protection Act

Although not an initial aspect of this research, many participants offered viewpoints on perceived inadequacies of the MMPA. These were captured and described both quantitatively and qualitatively in Chapter 3.

Role of Relationship

In addition, data were analyzed across coded categories in order to determine participant impressions of existing relationships, how they may have changed over time, and what impacted a relationship (both positively and negatively). Data were also reviewed collectively in order to determine if there was a difference in emphasis placed by any groups on relationship (i.e., so their perceptions of tactics and identified of improved outcomes have more of a relationship emphasis than process or substance). These results were described throughout the chapters but summarized in Chapter 4.

Appendix B
Questions and Information Needs Pursued during Interviews

Table B.1 Interview questions

Topic	Purpose/Questions
Assessing role and historical involvement	Please describe how you first became involved on the marine sound noise issue and how would you define your role over time? Looking for… • Perceptions on their level of involvement & their role • History and length of involvement • Role, Tactics, Stakeholder Perceptions, Improved Outcomes
2004-2005 FACA (if applicable) * *if applicable*	Can you describe your level of involvement in the 2004-2005 Marine Mammals and Noise Federal Advisory Committee? What are your thoughts on the success or failures of this effort? Is there anything you would recommend changing?
Defining the problem	How do you view the current situation? Looking for…. • Is it desirable? If not, what is a more desirable state? What must be done to achieve this? • Interests, Tactics, Stakeholder Perceptions, Improved Outcomes
Perceiving other stakeholders	Please look at this list of broader categories of stakeholder groups. (list provided) • Please share any thoughts or experiences you have had with these groups, positive and/or negative. • Of those you selected, how do you think they view the current situation? What are their motivations on this issue? • Do you believe any group or groups has had more influence than others on this issue? If so which one(s) and why? Looking for… • Perceptions of what participant believes are the motivations and goals of other stakeholders. • Where trust may or may not exist • Interests, Tactics, Stakeholder Perceptions How do you think they would describe your motivations and goals on this issue?

Role of Relationship	When thinking specifically about the issue of marine sound and marine mammals, what do you feel would be improved outcomes? What would make the issue improve from your point of view? Looking for… • Interests, Improved Outcomes (Recommendations for Process, Relationship, Substance) (Show conflict progress diagram) Please look at this graphic. It depicts three areas in a collaborative effort (process, relationships, substance). Collaborative action experts will tell you that all three areas are important to address in making progress on reducing conflict and ultimately meeting improved outcomes. So, please assume that all three areas are important and needed. Now, in order to meet improved outcomes, as you have defined them, do you feel any of these areas (Process, Relationship, Substance) are more important than the others or need more emphasis? Why? Looking for… • Interests, Improved Outcomes (Recommendations for Process, Relationship, Substance), Perceptions on role of Relationship
Collaborative Action Framework	Do you feel another collaborative effort is needed in the U.S. to address this issue? – If so, what are the most important elements of how such a process should be designed? – What do you think are the key challenges in a collaborative process on this issue? – Are there any other improved outcomes beyond what you already mentioned that would benefit from a collaborative action framework? – Have you been involved in other collaborative action efforts, either on this issue or others? If so, were there ones you thought were successful and what made them successful in your mind? Were there ones you felt failed and what made them fail in your mind?

Appendix C
Final Code Book

Table C.1 Final codebook

Organizational/Theoretical Codes	Related Substantive Code
INTERESTS (theoretical): defined for the purposes of this research, are the "why" behind a participant's stated position (the "what"). Some interests are fundamental "must haves" for an indivdual and cannot be compromised; therefore it is key to determine which interests are fundamental and which may be negotiable. Definitions of organizatonal codes in this category taken from http://www.merriam-webster.com.	
accountability	an obligation or willingness to accept responsibility or to account for one's actions
effectiveness/efficiency	producing a result that is wanted OR ability to do or produce something without wasting materials, time, energy (effectiveness); quality or degree of being efficient (efficiency)
	address mutual needs
	balanced/good enough approach
	creativity/flexibility
	dont wait for certainty
	engage earlier
	focus on what can answer/change
	leadership (direction and buy in)
	level of attention/focus
	long-term, coord prioritized strategy
	maximize gain
	need hammer/incentive status quo
	participant consistency (not turnover)
	pull all data together/communicate for common use
	pure science vs engineering approach
	scope of issue
	shared vision
	structure and adaptability to reg process
	sufficient support

environmentalism	advocacy of the preservation, restoration, or improvement of the natural environment
	protect enviro
	green practice
fairness	agreeing with what is thought right or acceptable; treating people in a way that does not favor some over other; not too harsh/critical
	$/time spent for compliance
	accuracy of info
	access/share info
	inclusiveness
	level of concern vs. other issues
	precautionary approach
	other unregulated sound sources
	req appropriate for situation
honesty	fairness and straightforwardness of conduct; adherence to the fact
	...academics bio
	...academics- geo and NSF
	...eNGO
	...govt
	...Navy
	...o/g
	...shipping
respect (professionalism)	feeling or understanding that someone/something is important, serious and should be treated in an appropriate way (respect); skill, good judgment, and polite behavior expected from a person who is trained to do a job well (professionalism)
	appropriateness of public statements
	ackowledgement of good work
	cordiality
	indiv/org effectiveness/professionalism
	respect others' opinions/missions/needs
	question credibility/intent
security (credibility)	state of being protected or safe from harm (security); the quality of being believed or accepted as true, real, or honest (credibility)
	...academic
	...eNGO
	...govt
	...Navy
	...o/g
	...shipping

security (financial)	the state of being protected or safe from harm (security); realting to money (financial)
	academics
	contractors
	eNGOs
	govt
	Navy
	o/g
	shipping
	fair funding
	money trumps everything- people have alot to lose
security (predictability)	the state of being protected or safe from harm (security); to declare or indicate in advance; especially : foretell on the basis of observation, experience, or scientific reason (predictability)
	...academics bio
	...academics- geo and NSF
	...eNGO
	...govt
	...Navy
	...o/g
	...shipping
	assess risk
	comply
understand/awareness	to know the meaning of (something, such as the words that someone is saying or a language), how (something) works or happens, how (someone) thinks, feels, or behaves (understand); knowing that something (such as a situation, condition, or problem) exists (awareness)
	science/tech
	raise awareness of own needs
	where balance should be
	needs/perspectives of others
	reg process
	science/impacts
IDENTITY CONFLICT (theoretical): occurs where parties make assumptions and hold prejudices about others based on their group affiliation. Trust is often at an all time low. Stakeholders become segmented into group positions with each group developing separate approaches to improve the situation from their point of view. Given deeply held assumptions about other groups, identity conflict is self reinforcing in that these prejudices lead to avoidance of working together which, in turn, inhibits collaborating toward meaningful outcomes (Madden and McQuinn, 2014).	
	academics bio
	academic bio and eNGO
	academics bio and govt
	academic geo and NSF
	academic geo and eNGO
	academic geo and govt

	eNGO
	govt
	govt and eNGOs
	individuals
	media
	Navy
	Navy and eNGOs
	Navy and NMFS
	Navy and o/g
	o/g
	o/g - E&P and geophysical
	o/g and eNGO
	o/g and govt
	public
	shipping
	shipping co and builders
PERCEPTIONS (STAKEHOLDER) (theoretical): perceptions of goals, motivations, purposes of others	
Perceptions of Others	
Academics- bio	
positive	mixed
	precautionary types
	add substance to reg process
	becoming/need more multi-disciplinary
	brings in good outside expertise (less constrained)
	doing good research
	have credibility w/ public
	help educate others
	objective
	pragmatic, open-minded
	will now accept industry funding for science
	work w/ Navy help reg understanding
negative	always want more science
	avoid absolute answer; keep asking questions
	can be biased
	do not want to advocate (or appear to do so)
	engage late in reg process late and just criticize
	focused on wrong questions
	ivory tower
	journals can deny industry publications
	not careful with what they say
	not involved/understand reg process
	perspective is narrow
	pressure to publish/tenure
	question industry/Navy science/scientists

	recs not always practicable
	scientists will always argue
	sensitive if question adequacy of their science
	stay stuck on own ideas
	think industry is never ending $ source
	think govt not understand science

Academic-geo & NSF, USGS	
positve	want reasonable conditions
	willing to negotiate
negative	avoid issue/reluctant to comply
	can be arrogant
	can ignore enviro issues
	do not advocate issues as much as industry
	feel science they provide justifies effects
	have split interests
	won't address/fund science questions
Contractors	
positive	mixed
	imp to whole process
	industry works with many contractors
	LGL
	lots of them
negative	produce needed products
	conflict of interest- push need for their products
	few ready to think outside the box
	keep going to make $ but not driving issue
	limited in understanding of issue
	not participate in reg process
eNGO	
positive	adapted/injury not greatest concern given science
	hold groups accountable
	involvement in issue is legitimate (not making it up)
	make alliance for stronger message
	provide passion to issue
	push/achieve change
	raise awareness
	represent public
	supportive of looking at intl regimes
	trying to understand issue
	want to solve
	will work with industry
	arguments are old/ineffective
	avoid form letters- more effective input
	can overstep their knowledge of situation

	can villainize/overhype/misuse info
	...do not take responsibility for messaging
	...do not convey collab processes to constituents
	...has not changed over time
	combative
	do not look for balanced approach
	do not state what want- only what they don't want
negative	do not support science
	end justifies the means
	eNGOs never satisfied so how can progress issue
	focus on US EU o/g- not Russia/China
	have more time to spend on issue
	infiltrate discussions w/ govt
	keep uncertainty to avoid authorizing action
	never acknowledge good work done
	only use info that supports interest
	overuse litigation
	participant turnover
	public face is different than private
	question their motivation/lost trust
	share provided info to progress own interests
	ship shock litigation instrumental; taught could sue
	teach public to have neg opinion on govt, industry
	think all noise is bad
	too many issues to focus on
	unwilling to compromise
	will not work with o/g
Individual Organizations	CBD
	Earth Justice
	Greenpeace
	HSUS
	IUCN
	Ocean Conservancy
	Oceana
	TNC
	Surfrider
	Walton Family Foundation
	WCS
NRDC	NRDC
	achieved some good change/some bad
	can provide good input
	looking for comon ground
	pressure started Navy research program
positive	push govt to wear white hat
	raised awareness of issue

	R w/ NMFS improved
	solid on science
	strong strategy
	can break pledges
	do not look for balanced approach
	do not negotiate in good faith
	govt afraid of/influenced by
negative	lead
	litigation is main strategy
	NRDC opened Navy eyes but Navy did the rest
	NRDC should contribute funding
	NRDC should lead/push for collab
	promote vibroseis w/o investigating it
	productive early on but now not helping
	will not collab/compromise
	would not include in collaborative approach
Government	
positive	better understand issue now
	depend on govt to do job right, comply w/ laws
	open to hearing needs
	reasonable and use industry science
	sometimes ask eNGOs to sue
	tough position, get lots of blame
negative	avoids conflict
	can have pre-ordained outcomes
	challenged with vague laws
	check the box
	diff regulators not on same page/lack coord
	do not understand limits to stakeholder involvement
	do not consider safety implications of req
	driven by threat of litigation
	fuzziness is easier (non-transparent)
	go after o/g but not renewables
	inefficient
	limited resources
	may not communicate reg changes
	need more predictable guidelines
	need more focused, digestible documents
	not good w/ science or outdated science
	not dealing with issue at proper level
	not proactive enough
	selective in science they use
	sharing info generates unwanted regs
	solely responsible for litigaiton level
	some power hungry, others not

	structure/goals discourage ingenuity
	too conservative
	use reg power to fund other science
	work well w/ NGOs on some issues but not others
ACOE	ACOE
BOEM	BOEM/MMS
	actions can affect academic geo
	challenged with dual mandate
	comment response could be better
	example managers
	funds research
	good R with o/g
	holistic approach
	looking for a balanced approach
	more user friendly than NMFS
	needs more protective leadership
	open to meeting w/ stakeholders
	strong influence
	used to be too cozy with industry
	use shared info to meet own needs
Congress	Congress
MMC	MMC
NMFS	NMFS
	apply Navy approaches too broadly
	bend to noise producers
	conflicting responsibilities being w/in Commerce
	do not care about activities they regulate
	does not want to share mgt
	doing a good job
	ESA/MMPA staff do not coord
	early on- insulting, not negotiate
	good at holding line with MMC
	good R with Navy
	good R with o/g
	have sig reg power
	inefficient
	lack funding
	make decisions w/o quality analysis
	need to pressure shipping
	need to bring clarity to process
	...acoustic criteria advanced issue
	...apprehensive about changing MMPA
	...no uniform guidance to regulatees
	not candid w/ stakeholders (guarded)
	overly conservative

	reactionary
	slow to respond to new data
	unclear on how will use science
	unwilling to act
NOAA Sanctuaries	Sanctuaries

Industry (Oil and Gas)	
positive	accepted issue
	do not want to cause enviro harm
	eNGO can work w/ some individuals
	Exxon Mobil willing to negotiate
	good R w/ academia
	has done what req from regs/govt
	has not gotten credit for good work
	mission is imp
	new generation has better ethic
	perception of no good faith are unfair
	sig power and funding
	want to solve
	will support common needs
negative	adverse to programmatic change
	bigger cos (more standards); smaller and intl (less)
	carry thru reg from corporate thru indiv operation
	cautious about sharing info w/ govt
	collab challenging w/ so many companies
	delay regs/views as impediment to progress
	dishonest about issue
	do minimal/avoid
	every man for himself
	hard for invid to be candid
	hard to make progress w/ them
	issue not a priority
	looking at site-specific impacts not cumulative
	must step up and fund science
	oppose precautionary principle
	should act more like Navy in approach
	smaller companies will go elsewhere (too much risk)
	will not do right thing unless pressured
JIP	JIP
	...credible work/good research
	...indicates o/g believes there is a problem
	...step in right direction but not successful
	...way to distract/micromanages science

Industry (Shipping)	
positive	acknowledge impacts
	do not want to harm enviro
	easier solution
	lobby leadership effective and team player
	mission is imp
	moving faster than other producers
	work with own shipping co (Shell)
negative	do not acknowledge impacts do not get pressure to change
	industry at large is not engaged
	largest producer of noise
	little science on shipping noise
	need hammer to get shipping to change
	regulated by multiple agencies
	tough to demand changes- US not own ships
	unregulated
Media	
positive	good tool to raise awareness
	holds govt accountable
	holds public attention
	imp for eNGO fundraising
negative	misrepresents info/gets it wrong
	need drama to get attention
Navy (U.S.)	
positive	act in good faith
	best protector of enviro
	biggest research funder/good science
	...lawsuits drove creation of research program
	do not want to harm enviro
	good monitoring
	good command and control
	has alot of resources to put on issue
	improved over time
	mission is imp
	Navy scientists are obj
	open to solutions/want to solve
	act in bad faith
	assumed initial compl would be sufficient w/ eNGOs
	blamed for alot
	cannot be wholly transparent (mission)/911
	cultural resistance to NRDC/eNGOs
	cutting back but need to stay fully engaged
	dishonest about impacts
	diverse org- hard to get traction

negative	do not want to be pushed around
	difficult to get tractions among all navies
	exempted while other producers are not
	fuels lawsuits b/c unwilling to reduce activity
	generate legislation to avoid addressing impacts
	have sig power
	initial Navy rxn created long-term conflict for all more collab in beginning
	more reactive than proactive
	navy/sonar issue can hurt other producers
	not open about what operational areas they need
	not willing to negotiate
	operational Navy does not care
	should work more with oil/gas sector
	think have science cornered but do not understand
	too much influence on NMFS
	turnover rate- relationship building challenging
Public positive	getting more informed than ever
	public perception is imp
	want to protect environment
negative	get misinformation from eNGOs
	influence driven by outside groups
	only respond to emotive outreach
	technical issue to relay to public/media
	uninformed
Tribes	
Most influential	
	fluctuates/equal/none
	shipping- not engaged
	academics
	govt
	...BOEM
	...NMFS
	eNGOs
	media
	Navy
	oil/gas
	public
	tribes
Perceptions of Self	
academic bio (self)	
	always want more science
	avoid absolute answers
	bias if take funding
	check/balance on govt

	do not advocate enough
	means to address larger mm research needs
	not involved in reg process
	optimistic
	pressure to publish/tenure
	scientist and environmentalist
	some dishonest- not admit bias want to solve
academic geo/NSF/USGS (self)	
	are reactionary instead of proactive
	developing science info for other stakeholders
	diff level on e compl than Navy
	feel science they provide justifies effects
	noise is driving factor for e compl
	increased investment in importance of science
	naive about influence on issue on reg
	not o/g so why eNGOs opposed
	o/g actions affect them
	try to collab but eNGOs do not want it
USGS	academic geos not understanding issue
	aggressive in research in US
	BOEM or o/g req affect them
	developing reg strategy
	fear will prevent future research
	good R w/ BOEM
	mixed R w/ NMFS
	must be beyond all criticism
	poor R w/ eNGOs
	reg burdensome, unpredictable
	very poor R w/ MMC
eNGO (self)	
	be precautionary where uncertain
	being threatening is powerful tool
	better R w/ Navy in beginning
	can be paranoid
	challenging to keep up with issue
	conflict w/ Navy decreasing
	conflict w/ o/g increasing
	diverge on issue of no action on fossil fuels
	groups backed away when issue grew complex
	hard/late access to info
	have least amount of influence
	honest broker
	imp to engage in reg reviews

	lack collab/compete on outreach and communications
	lack funding/staff than other groups
	long-term R w/ shipping lobby
	media is powerful tool
	more used to losing than producers
	most orgs will not negotiate w/ o/g
	need to understand mitigation effectiveness
	not always pragmatic
	open to settlement/negotiation but will litigate
	others misinterpret what they say
	prefer to work w/ precautionary academics
	some like conflict, not stakeholder processes
	unclear on govt process
	want adequate science
Oceana HSUS IFAW	Oceana
	HSUS
	IFAW
	board did not like idea of suing military (IFAW)
	funded NRDC
	good at using political connections
	have to appeal to broad animal interests
	key in getting IMO guidelines (shipping)
	litigation not a main tool
	noise easier garner support than whaling, emtanglements, strike
	noise as means to new generation
	noise not biggest issue
	not much effort to work w/ o/g
	promote quieting above mitigation
	raising money or media coverage as wins
	scientific expettise
	want to appear pragmatic- not all or nothing
NRDC	NRDC
	Client Earth
	do villainize/public campaigns
	encouraged by marine vibroseis
	end justifies means
	gladiator vs compromiser
	interact w/ o/g mostly in court
	limited resources vs. producers
	litigation/negotiation to get more science
	litigation is last resort
	lit keeps agency attention less focused on other (negative)
	maximize gain- litigation vs negotiation

	...prefer neg to lit
	more compliance now than ever before
	personal bias to improve things
	...used public campaign to first get Navy engaged
	prefer long-term, permanent solution
	protagaonists
	public outreach is powerful tool
	relationship w/ Navy
	...actions forced Navy into compliance
	....have told Navy what want
	...mixed interactions w/ Navy
	...poor R w/ Navy
	seismic settlement was productive
	use public forums
	very positive R w/ bio academics
	want to solve issue
	want to try new approaches for dialogue
	willing to agree in FACA
WDC	WDC
	expl of media efforts
	forefront intl in raising awareness
	good R w/ academics bio
	good R w/ navies
	how address concerns
	media and litigation imp tools
	need emotive words to get publics attention
	org noise strategy
	quieting should be top priority
	seek accuracy in what they say
	serve to translate noise issue to public
	some irresponsible eNGOs- misuse info
	want acoustic guidelines
	workshops are powerful tool
	want focus to be on cumulative
government (self)	
	agencies work well together despite differences
	competing mandates/not on same page
	driven by timelines
	govt should determine balance
	govt needs to be more proactive
	have to be cautious about what say/info shared
	improve mgt other countries by setting stage in US
	need govt scientists to drive science
	reg/mgrs be proactive, do not wait for science
BOEM	BOEM

BSEE	BSEE
Coast Guard	Coast Guard
	instituted perf standard to reduce effects
	main goal is to track issue
	no direct controversy with issue
	not enough internal resources if issue increases
	rep on IMO
	want consistency/predictability in reg process
MMC	MMC
State Department	State Dept
NOAA/NMFS	NOAA/NMFS
	biggest challenges- small # and behavior
	difficult personality (past)
	dont wait for regulator to act
	eNGOs think not restrictive
	eNGOs could step in and help more
	collab to comply
	eNGOs sometimes help push internal govt change
	govt people usually hidden motivations
	hard to be proactive w/ workload
	have to DM w/limited info
	increased expertise over time
	industry think too restrictive
	internal lawyers can inhibit collab
	leadership influenced by eNGOS (at least in past)
	leadership (some) stuck in past
	need more data on behavior
	need to improve mitigation
	need to produce more guidance
	need to communicate more w/ academics on reg needs/questions
	need to be more proactive than reactive
	need to reg at cumulative not indiv level
	others should not depend on govt; heavy workload
	persevered on shipping issue
	poor outreach
	practicability
	R good w/ many contractors (LGL)
	R good w/ BOEM
	R and P good w/ Navy
	R developing w/ USCG
	R w/ o/g improving
	R w/ NRDC improved
	rely on academics for outside expertise
	science has improved DM

	want to understand needs of others
	want more efficiency/effectiveness
	working on a long term noise strategy

Navy U.S. (self)	
	advocates change in MMPA/reg process
	cannot lobby Congress/little influence
	cautious w/ info sharing
	collaborate for mutual needs
	compl costs are unreasonable
	consider geo mitigations
	control access of Navy scientists to eNGOs
	denied at first but are now invested
	difficult to coord w/in Navy
	do more than req on mitigation
	easiest to blame/believe worst
	good stewards/do care
	have long-term research strategy
	held hostage to reg process
	helped progress science/want to improve science
	imp mission, make sacrificies, villainize is inapprop
	increased public outreach
	internal tug of war on what is enough
	modeling is waste of money
	Navy scientists are honest
	noise started public interest in Navy enviro effects
	not dealing with issue at proper level
	reconsider how regs should apply to military
	reg process is house of cards
	R good w/ many academic bio
	R great w/ NMFS
	respectful, disciplined culture- contrary to eNGOs
	voluntarily came into e compl
	...NRDC opened Navy eyes but Navy did the rest
Industry (Oil and Gas((Self)	
	cos- diff approach/collab challenging
	enviro and safety ethic
	good R w/BOEM and NMFS
	indiv in cos imp for enviro ethic
Geo co and E&P (general)	industry data are ignored/ not trusted
	lack long-term strategy
	need to meet business objs; lower risk
	need to work more w/ and like Navy
	partner in research to gain cred/improve science
	provide an imp economic resource

	R w/ eNGO very poor- hard to trust
	rather know answers then ignore
	want process that eliminates eNGOs
	want to know regulator needs
	want to increase credibility
	will follow what science says
	who speaks for industry???
	why us? other unregulated sources/industries
E&P (self)	E&P
	adaptive mgt
	build collab/coop at senior levels (but no eNGO sell)
	can have dishonest practices
	cautious- req in one area can spread
	difficult to understand unsolvable problems
	fund science that is likely to be answerable
	growing distrust of eNGOs by co. mgt
	interest depends on level of mgt interest
	life of field issue
	look at pop vs. individual animal level
	mostly just larger co engaged on issue
	need long-term, holistic dialogue
	noise competes w/ many issues
	NRDC lawsuit has changed level of attention
	protect/prepare for litigation
	science now protects better against eNGOs
	started WOC
	tremendous costs pressures
	unfairly targeted b/c o/g
	used to deny but now accept
	value of regs
	will collab where common needs
	will pursue solution if know eNGOs/others will agree
	with right leadership companies will follow
Geo Cos (self)	Geo Co
	agree w/ approp time/area closures
	believe no large impact b/c no change to pop levels
	co complying more
	compl is cost of business
	conduct own env analysis
	early- understand science/reg & confine mitigation
	engage govt for better decisions
	existing mit is sufficient
	getting permit can be competitive advantage
	have tried to collab w/ eNGOs, little success
	inconsistent req internationally

	improve communication on industry practices
	info share more now w/ govt
	key issue for geo
	limited staff/resources on issue
	make incentives match enviro req
	monitor issue worldwide
	no win situation
	not affecting o/g yet from monetary standpoint
	OK with JNCC/NTL guidance
	push back more on eNGOs
	solve through engineering
	strategize more on reg reviews
	support dialogue
	smaller cos go elsehwere- too much risk/cost
Industry (shipping) (self)	
	admits part of problem
	aware but not proactive
	challenge w/ engaging all aspects of industry
	classification societies
	concerns have not affected shipping
	co.- diff approach/affected differently
	co. diff than ship builders
	easier issue b/c unintentional noise
	enviro and business can coexist
	Maersk
	more concerned @ energy efficiency
	most cos do not think issue
	not sure where to prioritize issue
	need to separate out unintentional noise
	not under public scrutiny (invisible)
	slow, gradual agreement process at IMO
	strategy- not argue science b/c effec. stand. coming
	try and work with eNGOs
	worked w/ NOAA engage industry
WOC (self)	
	2nd phase-engage outside stakeholders
	growing awareness- broader ocean bus. community
	industries- be more involved in intl discussions
	insurance co/clients concerned @ risk to ops
	look holistically
	looking for solutions
	marine sound vs noise
	monitored issue at first
	need to have a business driver for success
	no involvement yet w/ non-indutsry

	now collab across industries
	science common demoninator to get people to talk
	some sectors slow to engage; looking too narrowly
	sound working group as mech to interact w/ WOC
TACTIC	
litigation	lit vs negotiation
positive	bring orgs into enviro compliance
	creates alliances
	discover non-public info
	Federal courts take noise issue seriously
	generate research
	get govt to do its job
	get people to table
	govt uses eNGO as tool to pursue own strategy
	increases knowledge of issue among parties
	make money
	protect enviro
	settlement can bring constructive discussions
negative	appear less pragmatic
	continue to litigate despite progress
	creates unproductive cycle
	divide parties
	do not focus on key issues
	focus becomes on protecting from lit
	governing by litigation is not good
	increases workload and costs
	inhibit desire to collaborate/communicate
	refuge of scoundrels
	risks to eNGOs
	no penalty to file a frivolous suit
	outcomes not based on science
	prevents long-term solution
	result in little outcomes
	stiffles creativity
	US is litigous society
Tactics seen as positive	
	acknowledge good work
	acknowledge role in problem
	act voluntarily before mandatory
	address common needs (collaborate)
	be pragmatic (compromise)
	build stronger relationships
	change regs more efficient
	change organizational behavior
	...eNGO

	...NRDC
	...govt
	...Navy
	...o/g
positive	...shipping
	develop a strategy
	engage senior leadership
	engage in reg reviews
	gain/provide equal representation
	generate reg guidance
	help not criticize
	honesty/good faith
	increase expertise/train participants
	learn ways for DM w/ uncertainty
	listen
	maintain dialogue
	...start dialogue early
	make accountable for actions
	monitor outside info/groups
	mutual learning
	pressure/work with regulators
	respectful to opposition
	share data/info
	thru inreach
	thru litigation
	thru lobbying
	thru media
	...to ensure accuracy of info
	thru peer reviewed publications
	thru public outreach
	thru risk assessments
	thru stakeholder outreach
	transparency
	use public will to force progress
Tactics seen as negative	
	admin process overly burdensome
	argue endlessly
	avoid/minimize/deny
	...industry only participate if effects bottom line
	…let others solve for them
	...not solve b/c financial
	do not acknowledge good work
	do not know what want
	do not listen
	emotions can be high

	encyclopedic enviro assessments from govt
	end justifies means
	exaggerate/overhype/misuse info
	exclude others
negative	inconsistent decisions
	limit dialogue
	make decisions w/o quality analysis
	not good faith/genuine
	...make activity appear greener
	not involved in reg process
	only use info that supports your interests
	question credibility
	refusal to lessen project scope even if meets project needs
	share confidential info from others to progress own interests
	slow process/delay b/c incomplete info
	threats
	unwilling to compromise
	use reg power to meet own needs
	villainize/disrespect/discredit/blame
	withhold info
Seen as positive and negative	use to stop larger activity (Navy, o/g)
FACA	
failure	
process	eNGOs hijacked process
	Navy drove process- too much power
	concensus driven
	FACA includes political people
	FACA does not allow for pure science negotiations
	FACA not right process for this issue
	facilitators ineffective
	grouped intentional/unintentional noise
	inflexibility to adjust process along the way
	lacked incentive to make work
	leadership changes
	poor ground rules
	poor process
	public realm forces to hold public stance
	too early
	too many parties involved
	unfair process for input
	ability people to deliver promises
	academics did not want to compromise
	alliances built that hindered progress
	alternates had more polarized views

	disagreements overshadowed agreements
	disrespecting others' opinions
	failed leadership
	ground rules ignored afterwards
relationship	maneuvering behind scenes
	members changing drafts in btw meetings
	no/not enough stakeholder buy in
	outside activities influenced
	personalities involved
	pointing fingers
	relationships did not develop adequately
	researcher caucus had mixed interests
	saw no benefit by end
	scientists argue
	shipping had to fight way into FACA
	people did not work together
	stuck on positions
	unwillingness to compromise
	insuff data- people left only w/ emotional response
success	
process	breakout groups
	facilitators did well
	timing of outcome not issue
relaitonship	allowed people to express opinion
	brought people together to discuss
	built relationships
	eNGOs bonded well
	eNGOs willing to agree
	got to know others and their arguments
	honest/productive conversations
	more discussion among agencies
	network opportunity
	people were willing
	helped elevate issue
	learned a great deal
	illuminated substance
	science caucus helped focus knowledge
COLLABORATION	
	worth pursuing?
	little chance success
focus	
	all
	process
	substance
	relationships

recommendations	
process	
	academic study and design/lead process
	enforce ground rules
facilitators	facilitator must know content to direct discussions
	independent, unknown facilitator
	manage dialogue w/ limits but flexibility
	remain neutral
	use professional mediators
	vet personalities prior to start
ground rules/expectations	allow flexibility and creativity for new solutions
	assess progress/results regularly
	avoid public attacks
	balanced view in discussions
	break into smaller parts vs address entire issue
	clarity on questions being addressed
	communicate follow up
	create a win/win
	do not blame or argue past
	expect will win some, lose some
	FACA (mainly no but some yes)
	focus should be improving govt policy
	focus dialogue on realistic issues
	focus on what is impeding progress
	focus on common interests/agreements first
	govt manage process???
	have a champion
	in person vs. remote
	keep in private space and not public
	listen/understand others needs
	look holistically
	look long-term
	make sure understand before react
	non consensus
	no pre-determined outcomes
	overarching body- advise/lead/resolve conflict
	participants agree on process
	primaries maintain involvement
	science as basis for dialogue
	set/manage (expectations, rules, objs)
	sep intentional/unintentional noise
	sep science and mgt based processes
	start big group then breakout groups
	think tank group to build R
	tiered approach

leadership	buy in from senior managers
	continued leadership
	intl org as lead
	collab to track issue and maintain equal awareness
learning	experiential /mutual learning
	from past mistakes
	train participants/increase expertise
	...science/tech
	...reg process
	...science/impacts
participants	choose personalities carefully
	group size
	more focused, long-term participants
	no single actor
	engage Europe in discussions
	engage media
	engage public
	role of Congress
	expertise
	diversity in opinion/expand expertise
	engineering perspective
	more multi-disciplinary people
	only w/ on water acoustics exp
	engage fisheries
	eNGOs
	exclude those who want to stop larger activity
	govt should determine
	have addl staff grunt work
	include all stakeholders
	shipping
	WOC
relationship	
	allow all to speak/vent/inclusiveness
	assess progress/results regularly
	avoid public attacks
	change org B
	acknowledge role in problem
	acknowledge good work
	act voluntarily before mandatory
	address common needs
	...make alliance
	be pragmatic (compromise)
	...compromise short-term, aim for better approach in long term
	be transparent on own orgs activities

	build relationships
	...build relationships first
	create win/win
	do not blame or argue past
	develop shared vision/ownership
	experiential/mutual learning
	focus on common interests/agreements first
	get parties to clarify what they want
	get people off their party line
	help not criticize
	have difficult conversations
	honesty/trust
	...honest about end game
	...negotiate in good faith
	informal/off record interactions
	listen/understand others needs
	maintain dialogue
	make sure you understand before react
	need motivation to come together/solve
	primaries maintain involvement
	problem solve as a team
	protect credibility
	respect each other
	share data/info
	sep people from problem
	willingness to compromise
Substance	
quieting	Develop alternatives
	encouraged by pursuit of vibroseis
	govt should incentivize
	IMO guidelines big step
	...focus on noisiest ships
	...more communication so industry uses guidelines
	...industry response has been lukewarm
	need co willing to take risks and pursue quieting
	NOAA pushed (effectively) ship quieting w/ IMO
	o/g pursuing quieting
	parallel tracks- science and quieting
	put all funds into develop. quieting vs science
	quiet specific places vs technologies everywhere
	reduce noise vs. argue science
	use quieting vs pursuing other mits
	understand effects first so know which to quiet
	concern do vibroseis and eNGOs will still have issue
	Navy quieting challenges

	o/g not pursuing
	o/g quieting challenge
	shipping quieting challenges
	should understand effects before endorse
	vibroseis is not going to be used in all situations
science (general)	ahead of decision
	acknowledge one approach will not fit all issues
	applied science
	engineer vs science approach
	more you learn realize less you know
	producers fund science
	science based DM can protect in court
	stregthen review of own science/credibility
	to reduce uncertainty
	to reduce regulation or unneeded mits
	to sell results and risk to o/g mgt
	to support green practice/know being protective
	understand impacts
	understand tech
	credibility w/ /funding
	difficult to keep up w/ science
	do not exclude topics/sound sources
	insufficient data points
	producers cannot control science
	science as a tyranny
	scientific purity
	to appear more credible even if not
	twist science to meet own needs
	uncertainty to avoid solution
	will science solve?
science (specific topics)	advocate risk contin. vs. aggregate (masking)
	advocate aggregate masking vs. risk continuum
	aspects of sound that disturb animals
	attempt to agree on science/questions
	...acknowledge injury not issue; focus other impacts
	...answerable questions
	...honest about good and bad results
	BRS/CEE
	baleen whale hearing
	baseline for shipping to compare post quieting
	collab on science/funding
	...groups too myopic/limited collab
	communicating science to regulators
	cummulative effects/population level
	define precautionary

science (specific topics)	define/standardize metrics
	determine sources to quiet (prioritize)
	determine where sound is not an issue
	dont wait for certainty to DM
	...how much science needed before act
	expert solicitation
	far field effects
	focus on what know/binning
	level of concern vs. other issues
	long-term, prioritized research strategy
	mm diving stress issue
	mitigation effectiveness
	modeling- determine priortied approach
	national dbase of PSO Info
	need more baseline/too focused
	pull all data together for common use
	question value of PCoD
	TTS
	understand mechanisms of masking
regulation	adaptive mgt
	classiciation societies
	collab on common sense approach
	collab approach across govts
	define precautionary
	define regulator decision need in order to drive research more
	determine where balance should be
	ESA/MMPA coord
	expand pile driving past injury
	how to holisitcally manage noise under MMPA
	incentivize green co
	integration w/ industry risk assessments
	level of concern vs other issues
	marine zoning/soundscape
	meaningful engagement in reg process
	...inclusiveness
	...non-applicants cannot engage meaningfully
	...process puts public in accept or challenge mode
	mitigation
	...mit appropriate for situation?
	...carry thru reg from corporate thru indiv operation
	...implement standards no matter where operating
	...mitigation by severity of impact
	...mitigation effectiveness
	...modeling and PSO limits

	new ways for DM w/ uncertainty
	...risk cont vs. binary approach
regulation	ocean budgets
	practicability
	predictability
	regs- consist./approp./efficiency
	...comply
	...consider new data in regs quickly
	...NMFS do own analysis/science (not coop agency)
	regs/permits- clarity/guidance
	...understand reg process
	...dont wait for scientific certainty
	...establish criteria
	...NOAA noise strategy
	regs/permits less burdensome
	revisit how regs apply to military
	safety
	sound vs noise (context of statute)
	understand how reg use science in DM
MMPA	beaucracy around process
	cannot do needed research on animals b/c protected
	citizen suits are imp
	inefficient
	inadequate to address noise
	indiv animal vs population
	lack of clarity/predictability
	multiple statutes complicate
	regs do not adapt/inflexible
	segmentation
	strong act
	time crunch to make reg decisions
	true intent being misapplied
	uncertain how to comply
	unequal/inadequate reg pressure
	undermined by powerful applicants
	unreasonable statute
	challenges to amending MMPA
	change in segments vs overhaul
	consider fishing approach
	get rid of five year process
	military level b def for all
KEY EVENTS	
	early
	ATOC
	Chicxulub

	CST2
	DeMaster article
	DWH
	EU Marine Strategy
	Exxon CA seismic
	GOM settlement
	Heard Island
	IMO guidelines
	IWC
	JNCC
	LFAS
	LS 184 biop (GOM)/NTL
	London meeting
	Mid frequency sonar
	MM and Sound Workshop
	National defense exemption
	Ocean Policy
	Open Water Meetings
	Payne and McVey
	PG&E
	RIMPAC
	Sakhalins
	Ship shock trials
	Shipping symposia
	SOSUS
	Strandings
	...Peru
	...Bahamas stranding
	…….first multi-group science collab
	...Canary stranding
	...Greece strandings
	...Gulf of California
	...Hawaii
	...Madagascar
	...Prince William Sound
	...Tasmania
	...Baja
	SWAMP/SWSS
	Valdez
ANALOGS	
	shipping analog
MULTIPLE	
	complexity of issue
	...issue diff among producers
	...not complex

	...totemization
progress	
	more predictable guidelines
	improved collab
	identified leaders
	improved awareness/attention
	...Navy has evolved positively
	...shipping
	...o/g
	improved evaluations of impacts
	increased expertise
	improved monitoring
	improved relationships
	...NMFS and NRDC
	...NMFS and Navy
	...academia and industries/navy
	...o/g and govt
	...o/g and tribes
	improved scientific info
	improved understanding of each other
	learned from past mistakes
	more protected against eNGOs
	open water- long term dialogue
	more permitting/compliance
	...improved where political room to do so
ROLE	
INTERNATIONAL	
YELLOW	
BIAS-RESEARCHER	
QUOTE	
LOOK UP	

Appendix D
Recommendations of the Caucuses of the 2004-2005 Marine Mammals and Noise Federal Advisory Committee

Table D.1 2004-2005 FAC caucus recommendations

Caucus	Recommendations
Scientific Research Caucus ***** included both Academic (Impact) and Academic (Geo)	❖ develop national research program ❖ develop Population Consequences of Acoustic Disturbance model ❖ improve the regulatory process, particularly streamlining scientific research permitting and providing resource agencies with sufficient staff ❖ revise MMPA definition of harassment to cover only activities that meaningfully disrupt behaviors that are significant to the survival and reproduction of marine mammals ❖ increase public outreach so scientifically valid information is readily available to public ---------- – Study effects of mid-frequency sonars (and airguns and alternate sources) on odontocetes (focused effort on beaked whales). – Test assumptions about which species avoid intense sound sources enough to avoid adverse impact, including testing ramp-up. – Develop new methods to monitor, detect, and/or predict the presence of marine mammals and test their effectiveness – Test effects of low frequency shipping noise on baleen whales. – Test effects of high frequency sound sources designed to affect marine mammals on coastal species specialized for high frequencies. – Develop new modeling and empirical efforts to link changes in behavior and physiology to vital rates of individuals. – Tie controlled laboratory data to expanded field tests. – Design acoustic sensing ocean observation networks to monitor ambient ocean noise levels and global, regional, and local trends. – Survey the status, abundance, and distribution of marine mammals globally to develop an improved capability for assessing the exposure of marine mammals to sound producing activities. – Develop a broadly accessible database of results from strandings with standardized necropsies capable of detecting most causes of death. – Support development of more sophisticated methods to sample behavior and physiology of marine mammals in laboratory and wild. – Support long-term field studies of baseline behavior for selected marine mammal populations.

Environmental Caucus	❖ manage (government) by the precautionary approach and maintain integrity of MMPA ❖ avoid sensitive areas as a primary management tool (identify hot spots, marine zoning) ❖ establish independent national research program (focus on mitigation and quieter tech) ❖ use non-invasive studies over controlled exposure studies until short-term effects known ❖ provide public with better and more timely information on noise-related events (strandings) and make investigations transparent to the public --- – Research should be directed toward mitigation and the development of more effective mitigation tools, such as improving Passive Acoustic Monitoring, or engineering modifications or alternatives to make noise sources safer for marine mammals (*e.g.*, quieter, shorter duration, more directional, eliminating unnecessary frequencies). – Baseline research to determine where the greatest concentrations of marine mammals and indeed, marine life, occur in the oceans is vital in order to protect these areas to the greatest degree possible. Conversely, areas that represent "deserts" for marine life and could be suitable for some noise-producing activities should be identified. – More and better retrospective analyses of past stranding data should be conducted, using suitable controls. To do this most effectively, noise events worldwide, including naval maneuvers, should be disclosed and documented. Stranding networks should be improved worldwide, and data consolidated, while stranding protocols to better detect acoustic injuries should be established. – Long-term, systematic observations of known individual marine mammals in the wild provide the most in-depth information on population-level impacts. Individuals should be studied in different noise conditions using ongoing noise-producing activities so as to gain insight into the impacts of noise on marine mammals in a less invasive way without adding more noise to the environment. – Research is needed on ecological effects, both on prey species and on marine mammal population dynamics. The cumulative and synergistic effects of noise, together with other environmental stressors (IWC 2004), should be examined. – Stress hormones (*e.g.*, in feces) should be studied from marine mammals in noisy and quiet areas. – Hearing in more easily studied marine mammals, such as pinnipeds, should be examined in high-noise areas compared with suitable controls.

Federal Caucus * included Navy, National Science Foundation and other federal agencies	❖ narrow tremendous gap btw the information available and the information needs ❖ continue to make decisions in the face of scientific uncertainty ❖ improve management system while investing in research ❖ determine the efficacy of current mitigation measures in the near-term ❖ continue strong support for Federal collaboration in research and management ---------- – A sustained national research program to: (1) improve information available to decision-makers by increasing our understanding of anthropogenic sound sources, marine mammals and the effects of sound exposure on marine mammals, and (2) investigate new means of mitigating potential impacts of sound on marine mammals; – Continuing agency efforts for more effective, efficient, and transparent management and mitigation of sound producing activities and their potential adverse effects on marine mammals; – Strengthen the capabilities of Federal agencies to understand acoustic impacts and improve management systems to protect marine mammals while maintaining ocean activities important to the nation; – Better coordination internationally to address information gaps and apply new knowledge to the development of mitigation technologies.
Energy Producers Caucus	❖ The absence of any "environmental crisis" relating to anthropogenic sound and marine mammals; and the need for public policy decisions to weigh known anthropogenic threats to marine mammals (e.g., fishing by-catch) when considering how best to reduce man's threats to these animals ❖ The need for additional science-based research ❖ The need to focus on mitigating adverse effects at the *population* level (e.g., focusing mitigation on key factors such as adult survival and reproduction), although subpopulation or individual factors should not be ignored ❖ The need to rely on risk assessment as the key tool in evaluating when, where and how mitigation measures may be appropriate and best applied ❖ The need to employ a "balanced protective approach" in managing competing interests and mitigating anthropogenic sound ---------- – We agree with the conclusion of the NRC report (2005) that there is no information that leads to a conclusion that anthropogenic sound causes population- level adverse effects on marine mammals. – Any assessment of threats from anthropogenic sound must not occur in a vacuum. – As in all other areas, U.S. government resources to assess and address anthropogenic sound are not limitless. Therefore, in establishing priorities and allocating resources, policy makers must assess risks and benefits and consider all relevant factors in making balanced decisions. Hence, anthropogenic sound must be evaluated in the context of other anthropogenic threats to marine mammals, such as fishing by-catch, ocean pollution, habitat degradation, harmful algal blooms, whaling,

Energy Producers Caucus cont'd	vessel/whale collisions, and whale watching. Any biologically-significant adverse effects caused by anthropogenic sound must be examined in the context of other known causes of marine mammal disruption and mortality. And perhaps most important, research, management and mitigation activities must be focused on the most likely areas for potential risks of *adverse effects* of sound, not simply on sound itself. – In evaluating risks and benefits, it is crucial to distinguish between risks to marine mammal populations rather than minor behavioral effects on individuals. – No "one-size-fits-all" for effective mitigation. – Management and mitigation programs should be science-based and reflect assessments of risks and benefits in the face of uncertainties. – Considering what is known about the small numbers of whales adversely impacted by sound, current mitigation measures appear to be more than adequate to protect the viability and reproduction of marine mammal populations. Specific monitoring and mitigation activities, however, should be determined by a risk- assessment. – There is substantial inconsistency in the current management of sound-producing activities. – An adequate long-term research investment is needed. – Federal agencies, which have been at the forefront of marine mammal protection and research on a worldwide basis, could enhance their leadership by taking several steps. These include: o Improving permitting certainty and timeliness for both researchers and sound producers. o Conducting necessary marine mammal research, including population studies, biological response studies, and life history studies, which comprise the core information base required by the agencies to adequately manage the resources that they are mandated to regulate. With more complete information, the agencies could conduct better risk assessments and make improved, scientifically-based regulatory decisions. o Improving permitting processes, which over the past decade have been imperiled by litigation whose sole intent appears to be to prevent all permitting. o Developing mechanisms to collectively process and issue permits and authorizations that are similar, based on species, region or activity. o Creating a standardized and centralized database to make collected information useful to researchers, sound producers and others. – Policies are needed that balance protection with risks and benefits in the face of uncertainty. – Marine mammals have been stranding themselves for thousands of years, long before man-made sound 12. A "balanced protective approach" is the appropriate way for managers to make decisions in the face of scientific uncertainty. – Regulatory agencies should avoid layering caution and more caution on conservative judgments and assumptions. – "Universal international guidelines" that regulate anthropogenic sound would compromise national sovereignty generally and specifically U.S.

Energy Producers Caucus cont'd	interests regarding national defense, commercial trade, energy production and economic development. – New technologies and research method development is crucial to advancing marine mammal science. RECOMMENDATIONS TO CONGRESS AND FEDERAL AGENCIES – The appropriate federal agencies should complete an integrated assessment of the status of marine mammal species and populations and the potential impacts of anthropogenic sound at the population level. – Federal agencies should be given guidance concerning how to balance management of the multitude of activities which produce anthropogenic sound in oceans. – The appropriate agencies should expand and improve their use of risk-based and science-based assessments in development of their management and mitigation regimes. – An interagency task force should be established to improve the cross-boundary coordination of federal marine mammal activities. – Agencies should be given guidance to improve permitting certainty and timeliness for both researchers and sound producers. – Congress should require that the agencies, as they perform their duties to manage marine mammals, take into consideration the vital importance to the nation of continuing to find and produce new offshore energy resources. – Congress should provide adequate funding so that designated agencies will have adequate resources to carry out their mandates efficiently, and so that key scientific information can be gathered on marine mammal biology and life history. – The Energy Producers Caucus does not completely endorse the recommended levels of funding proposed by the Scientific Research Caucus. There are two major concerns: 1) a concern that the risks associated with the issue, and competing budget pressures may not justify spending $150,000,000 to $200,000,000 over 10 years (e.g., could we save many more marine mammals by reducing fishing by-catch impacts?) – As Congress considers the scheduled reauthorization of the MMPA and ESA, it should streamline and simplify the current statutory and regulatory structure for protection of marine mammals.

Commercial Shipping Industry Representative	• These comments I provide to you today are solely with respect to the issue of sound generated by commercial shipping and what I believe to be the prudent way forward to assure that the issue is addressed in a manner which takes into account the need to preserve our oceans' precious marine resources while at the same time preserving their use as global highways of maritime commerce. As you may recall from the many long hours the committee met, on several occasions, one sound producer or another attempted to redirect the spotlight from their sound producing operations to those of another sound producer. I did not at that time and will not now participate in this type of finger pointing exercise. Quite simply, the first point I wish to make on behalf of the

	commercial shipping industry is that any sound producer that is conducting activities that negatively impact marine mammals must be willing to further investigate those activities with a focus on the specific origins and characteristics of those sounds and possible mitigation methods. • While it is overly simplistic to state the obvious, it is critical that the nature and extent of any particular sound source's impact be identified before any mitigation strategies can be identified. We all know how difficult that discussion can be and how even more difficult the process can be when trying to reach some agreement on the appropriate course of action taking into account the significant gaps in information needed versus that which is available, dealing with scientific uncertainty and assessing the impacts of various mitigation strategies on a wide variety of marine mammals, in a hydrographically diverse world. It is no surprise to anyone that the commercial maritime industry is not expert in the fields of marine biology or acoustics. What the industry is expert in is transporting the world's trade in a safe and environmentally protective manner and our approach to the issue of impacts of commercial shipping noise on marine mammals takes and will continue to take that most serious of commitments to heart. • We support the submission by the scientific research caucus entitled "Scientific Research Caucus, Statement for the Report of the Advisory Committee on Acoustic Impacts on Marine Mammals to the Marine Mammal Commission" dated 3 January 2006. This submission supports our position that a great deal of information that we need in order to make intelligent decisions is simply not yet available and a national research program is necessary to begin to fill these critical gaps in knowledge. We also fully support utilization of the 5-stage risk assessment process as the proper framework for guiding our thought processes from hazard identification through risk management. • Specific to the generation of sound by commercial shipping, we emphasize text found in the above referenced submission at page 13, which reads in relevant part, "Of longer term importance is research to test whether there is a hazard from currently unregulated sources of sound. The potential effect of low frequency ship noise on animals sensitive to low frequencies is perhaps the highest importance here, since ship noise has increased global ambient noise and is relevant for endangered baleen whales. We know that shipping has elevated average noise levels ten to 100 fold in the frequency range at which baleen whales communicate, but we have no evidence whether this poses a risk of adverse impact." (emphasis added) • Acknowledging this lack of evidence of adverse impact, we support the recommendation of the scientific research caucus that studies should be conducted that measure the effects of low frequency shipping noise on baleen whales. In fact, we would take one step further and urge that the United States take a leadership role in appropriate international fora which may oversee the conduct of this type of research at an international level. As I stated many times during our many hours of committee deliberations, neither sound nor whales respect neat

Commercial Shipping Industry Representative cont'd	jurisdictional boundaries. Based on the long ranges low frequency sound is transmitted and the global nature of commercial shipping, a local or even national program to assess impacts simply will not provide the entire picture necessary to assess the impacts of sound generated by commercial shipping on marine mammals and identify potential mitigation strategies. • We are not however, suggesting that sound producers, including those of us that make up the commercial shipping industry, sit idly by waiting for all the necessary scientific data to be assembled. During this critical period in which impacts of sound on marine mammals are assessed, sound producers should begin to examine possible mitigation strategies which may be employed if, and when, the adverse impacts on marine mammals are both characterized and quantified. • In the case of the shipping industry, ship quieting technologies have been and continue to be identified which focus on methods to reduce sound from normal ship operations for reasons other than impacts on marine mammals e.g. military purposes, reduction of sound levels in ships' living spaces for crew and passenger comfort and safety, and machinery operational and maintenance benefits from reduced vibration. In addition, design and construction techniques developed to reduce propeller cavitation, the single largest contributor of ship generated noise in the low frequency ranges of concern for marine mammals, are continually being refined to improve the fuel efficiency of today's modern marine propulsion systems. • In order to fully address the issues associated with sound generated from commercial shipping, expertise from naval architects and ship engineers must necessarily be injected into these discussions to adequately examine a vessel as an individual point source. In order to adequately examine sound from commercial vessels as a collective source of ambient noise in the oceans, global experts on ship routing and maritime trade must also be integrated into the discussions in order to examine and identify maritime traffic densities throughout the world. • Finally, only a very small percentage of the commercial shipping industry is even aware that sound generated incidental to the normal operation of commercial vessels may even be a problem for marine mammals. This necessitates an aggressive education and outreach campaign designed to reach all the necessary experts (ship owners, naval architects, design engineers, ship routing specialists) so that the general nature of the problem is made known and its potential impacts and possible mitigation measures may begin to be identified. • This is not to suggest that we support immediate mandates that all ships or even new ships employ ship-quieting technologies. It is to say however, that the commercial shipping industry as a whole must begin to think about this issue and possible solutions, if adverse impacts are found to result from ship generated sound. Furthermore, we do support the continuing review and voluntary implementation of cavitation reduction technologies on new ship construction since not only do these technologies result in better fuel efficiency for the vessels on which they are installed, but also have the additional benefit of reducing low

Commercial Shipping Industry Representative cont'd	frequency sound from normal ship operations. • In the items directly above, we have outlined in very general terms the steps we believe are justified for addressing the issue of sound generated from commercial shipping. However, an equally important question is how does this initiative get started and by whom? Clearly the scientific issues must be addressed by the scientific community, hopefully at the international level. However, we believe the commercial shipping issues outlined above are ideally addressed by the International Maritime Organization (IMO), a subsidiary body of the United Nations. The purposes of the Organization, as summarized by Article 1(a) of the IMO Convention, are "to provide machinery for cooperation among Governments in the field of governmental regulation and practices relating to technical matters of all kinds affecting shipping engaged in international trade; to encourage and facilitate the general adoption of the highest practicable standards in matters concerning maritime safety, efficiency of navigation and prevention and control of marine pollution from ships". Today, IMO's membership stands at 166 member states and a number of intergovernmental and non-governmental organizations that provide broad expertise in all matters maritime. Within these 166 member states, stand the world's maritime powers as defined both in terms of trade volume and vessels registered under the flags of particular countries. In short, all the global players necessary to address this global issue are active participants at IMO and as such the interests of flag states, port states and coastal states alike are well represented. • Therefore, we strongly support that the United States take a leadership role in bringing this issue to the International Maritime Organization. While we would certainly defer to those that are more expert in diplomatic relations and strategies, our suggestion for a first step would be for the United States to submit an information paper on this issue with as much information as practical to assure that the IMO membership is fully informed on this issue. This submission must necessarily touch on the scientific aspects of marine mammals and sound as well as the information gaps that exist relative to defining the nature and extent of the problem relative to all sound sources. The submission must also include a more focused discussion on the possible impacts of sound generated from commercial shipping, identification of possible mitigation strategies and urge further discussion of this issue at the international level, both at IMO and in any other appropriate international scientific body. Utilizing the collective expertise within the IMO community, will enable critical discussions to occur and foster a better understanding of the role that commercial shipping may play in future sound mitigation efforts.

Appendix E
Comparison of How Groups Perceive Themselves and Each Other and Perceptions of the Influence of Other Groups

Table E.1 Comparison of how groups perceive themselves and each other

Group	Perceptions of Self	How Perceived by Other Groups
Academic (Impact)	always want more science avoid regulatory process can be biased esp w/ funding do not advocate optimistic pressure to publish/tenure scientist/advocate challenges want to solve	always want more science avoid absolute answers can be biased doing good research do not want to advocate not involved in regulatory process question industry/Navy science stay stuck on own ideas
Academic (Geo)	affected by oil and gas actions burdened by regulations develop science info for others invest in importance of science naïve about influence of noise not all accept issue reactionary instead of proactive	avoid issue/reluctant to reply can be arrogant can ignore environmental issues feel science justifies effects have split interests want reasonable conditions willing to negotiate won't address/fund science on noise
eNGO	challenging to keep up with issue emote to get public attention end justifies the means engage in reg reviews lack resources of other groups litigation is last resort litigate to get more science may not negotiate with oil/gas open to settlement but will litigate others misinterpret what they say protagonists some like conflict use media effectively use public outreach effectively want adequate science want to solve issue	combative do not take responsibility for messaging do not look for balanced approach hold groups accountable litigation is main strategy for some make alliances for stronger messages never satisfied so how can solve overuse litigation public face different than private face push/achieve change question their motivation raise awareness unwilling to compromise villainize/overhype/misuse info

Government (federal)	agencies work well together collab to get compliance driven by timelines eNGOs think NMFS not restrictive have to be cautious w/ words make decisions with limited info need to be more proactive NMFS wants practicability	different regulators lack coordination driven by threat of litigation inefficient NMFS bends to noise producers NMFS needs to bring clarity to process NMFS decides w/o quality analysis NMFS ESA/MMPA staff do not coord not dealing with issue at proper level not good w/ science or don't keep up not proactive enough selective in science they use tough position, gets lots of blame
Navy (U.S.)	denied at first but now invested difficult to coordinate within Navy easy to blame good stewards/do care held hostage to reg process helped progress science make sacrifices but villainized important mission internally trying to find balance unreasonable compliance costs voluntarily came into compliance	biggest research funder cannot be transparent esp after 9/11 dishonest about impacts do not want to harm environment fuels lawsuits b/c won't reduce footprint good command and control improved over time not willing to negotiate sonar issue hurts other producers turnover rate high- hard for relationships want to solve
Oil and Gas	**Both E&P and Geo Companies** difficult to collab w/ many cos must meet business objectives lack long-term strategy partner in research relationship w/ eNGOs poor safety and enviro ethic is strong **E&P** denied at first but now invested hard to sell collab w/ eNGOs to senior leadership given past noise competes with many issues unfairly targeted b/c oil and gas will collab where common needs will pursue if know eNGOs agree **Geo Companies** limited staff on issue need comm. industry practices noise is a key issue no win situation some feel no pop. level impacts want to understand	accepted issue adverse to programmatic change credible research dishonest about issue do minimal/avoid issue do not want to cause enviro harm hard to make progress with them important mission issue not a priority JIP distracts, micromanage science new generation has better ethic oppose precautionary principle significant power and funding want to solve will not do right thing unless pressured

Shipping	companies aware but not proactive hard to effect change throughout entire chain shipping companies are different than ship builders lobby leadership acknowledges issue more concerned about energy efficiency	companies do not acknowledge impacts do not get pressure to change do not want to harm enviro easier solution largest producer of noise little science on shipping noise lobbying leadership more effective need hammer to get companies to change unregulated industry

Table E.2 How groups perceive the influence of other groups

Group	Perceived Influential Groups
Academic (Impact)	eNGOs Government Oil and Gas
Academic (Geo)	eNGOs NMFS
eNGO	Navy Oil and Gas
Government (federal)	fluctuates eNGOs Navy
Navy (U.S.)	eNGOs Navy
Oil and Gas	eNGOs
Shipping	no response

Appendix F
Influence of Litigation

Table F.1 Perceptions of litigation by each stakeholder group

Academic (Impact)	71% of academics commented on this topic. Of these, 29% felt litigation helped bring organization into environmental compliance but the same amount also felt it divided parties and inhibited desire to communicate. A much smaller amount (14% of academic impact participants) felt litigation generated research but that it prevented long-term solutions.
Academic (Geo)	67% of group responded. Of these, 33% felt government focus is now on protecting from litigation and that governing by litigation was not good. In addition, 33% felt that litigation inhibited desire to communicate.
eNGO	75% of group responded. Of these, 50% noted they really weigh the benefits of litigation vs negotiation. 50% talked about the risks of litigation to eNGOs. 38% felt it brings orgs into compliance, generates research, protects environment. 25% noted litigation divides parties, inhibits desire to collaborate but gets the government to do its job and increases knowledge among parties.
Government (Federal)	71% of group responded. NMFS response was 100%. Of these, 29% (100% from NMFS) felt the focus becomes protecting from litigation and increases workload and costs. 14% inhibits desire to collaborate and communicate, continuing to litigate despite progress, divides parties, results in little outcomes.
Navy (U.S.)	100% of group responded. Of these, 75% felt government focus is now on protecting from litigation; 50% felt that litigation divided parties and inhibited desire to collaborate and communicate; 38% continue to litigate despite progress and increased workload and costs; 25% recognized litigation did bring orgs into compliance but also that the US was a litigious society and there was no penalty for filing frivolous lawsuits.
Oil and Gas	67% of group responded. Of these, 25% felt focus is now on protecting from litigation and that litigation inhibited desire to collaborate and communicate. 17% felt governing by litigation was not good, litigation divided parties, increased workload and costs.
Shipping	no discussion on litigation

Appendix G
Group Responses to Marine Mammal Protection Act

Table G.1 Group perceptions of Marine Mammal Protection Act

Academic (Impact)	Inadequate to address noise (29%) Individual vs population Lack of clarity/predictability
Academic (Geo)	Lack of clarity/predictability (100%) Inefficient (100%) Multiple statutes complicate (33%) Beaucracy around process (33%) Time crunch to make decisions (33%) Uncertain how to comply (33%)
eNGO	Strong act (50%) Inadequate to address noise (38%) indiv animal vs population (25%) Lack of clarity/predictability Segmentation Undermined by powerful applicants
Government (Federal)	Inadequate to address noise (43%) Individual animal vs population (43%) Inefficient (29% other govt) Lack of clarity/predictability (43% other govt) Challenges to amending MMPA (NMFS 40%)
Navy (U.S.)	Inadequate to address noise issue (63%) Individual animal vs population (63%) Inefficient (50%) Lack of clarity/predictability (38%) Consider fishing approach (38%) Get rid of five year process (25%) Bureaucracy around process (25) Unreasonable statute Challenges to amending MMPA Does not adapt/inflexible
Oil and Gas	Inefficient (25%) Inadequate to address noise issue (25%) Individual animal vs population (25%)
Shipping	did not discuss

Appendix H
Researcher Identity Memo

created January 10, 2014 and edited throughout research

Impacts of ocean noise on marine life is an issue in which I am an interested and engaged party. This means that I will be diving into, interviewing and engaging with people who have largely interacted with me previously on a professional level on this same issue. On one hand, this level of knowledge can lead to a greater understanding and depth in what questions to ask and how to interpret data results. It can also provide for a greater level of access to information and other interested parties. On the other hand, there is a risk of my biases affecting data collection (e.g., what questions are asked, unintentional influences during interviews) and analysis and even a risk of whether or not my professional role will influence whether, and to what degree, people will openly talk with me.

The purpose of this memo is to then identify my biases so that this can be considered throughout the data collection and analyses. This memo collectively captures potential bias on all phases and issues addressed during the research. My intent is to revisit this memo frequently throughout data collection and analysis, add to it if I discover additional biases and compare its contents to my data analyses to double check and note where my biases may be affecting data collection and interpretation.

I also plan to actively promote a research partnership with interviewed parties, including opportunities for them (if interested) to review their interview materials and/or draft frameworks to help ensure their statements are accurately captured and my data analysis appears correct. These are very powerful opportunities for interviewees to double check my data analysis and conclusions and also continue to feel there is real truth behind the research partnership approach.

Context

My near 20-year career has focused on environmental issues, largely as a federal employee (BOEM, NOAA) dealing with ocean impacts, marine mammals and endangered species issues. I have also spent a number of years working for non-governmental organizations (National Wildlife Federation and Dolphin Research Center). This has included extensive work with marine sound issues but also working on a variety of other environmental issues—oil spills, tribal consultations, air and water quality, fish. Through these experiences, I have witnessed the constant battle between human conflict and developing sound, efficient and sustainable decisions. Time and time again, decisions prove to be unsustainable for many issues. A decision may result in seemingly immediate improvement (e.g., tempers calm down) but inevitably will resurface again at later points. There have been so many meetings on several issues where I have thought, and other parties have voiced, frustration with "why are we still here, "why are we still addressing the same questions and issues as 3 years ago" etc. "There has to be a better way to do this."

The standard federal linear decision-making approach, which focuses largely on using 'hard' science/scientific expertise, avoids directly acknowledging/addressing conflict, and limits decision-making power, does not work for complex environmental issues. Further, even where the federal government has promoted or used non-linear, collaborative action directives and efforts, there is still a missing and key component fundamentally necessary to make a collaborative process work. This involves the critical steps needed to understand and transform the conflict. Federal resources would be better spent investigating, understanding, addressing and transforming the underlying conflict among interested parties on these particularly challenging issues and view this investment as a critical and cost-effective 'tool' for reaching better decisions and resource outcomes.

Throughout my masters and Ph.D. coursework, I took two classes on conflict. One was taken during the masters program and focused on conflict resolution in the context of peace issues. It did not include a study of resolution or transformation processes nor environmental issues. The course did, however, raise my awareness of the role and heavy influence of conflict in the major political issues facing the world. During my Ph.D. coursework, I took a two-week intensive, full-time, residential course on Conservation Conflict Resolution. It was in this class that my understanding of the role of conflict in environmental issues was awoken. This course was also heavy on methods. After these two weeks, I felt a new understanding of how I needed to change my approaches to dealing with complex environmental issues and began to consider how this approach was essential to many issues I worked on as a federal employee.

I am not a conflict resolution or transformation expert by any means. But I am a federal manager working some seemingly intractable environmental issues who wants to find a better path forward. So, I do come to this research with a bias that traditional linear decision-making approaches do not work in the context of wicked environmental issues in the federal policy arena. To test my theories, I selected the case study involves federal regulation of the effects of anthropogenic sound on marine mammals.

There are some issues that are just truly wicked

- WEPs represent the most complex type of environmental issues faced by the federal government.
- They are broadly defined as environmental issues having a high level of scientific uncertainty, numerous interested parties with diversified values, political and regulatory complexities and a continually evolving ecological and social environment.
- Such a combination leads to highly complex, controversial issues that are often fraught with failed decisions, litigation and increasing frustration by interested parties on why a better solution cannot be found.

Linear decision making approaches do not work for WEPs

- Traditional government process
- linear decision making
    - ID problem in response to their specific regulatory needs
    - gather and analyze the best available data

    - develop one or several potential policy approaches (largely based on analyses and regulatory needs internal to the agency)
    - share alternatives briefly with interested parties for review
    - incorporate interested party comments
    - finalize a decision
    - Sounds like NEPA!
- done in a short period of time to meet regulatory time frame, political will or to avoid litigation
- linear approaches are too short-sighted for WEPs; chosen solution does not work (i.e., fails in implementation, challenged in litigation), agency repeats cycle (produces lengthier, more robust environmental analysis in an attempt to satisfy the failed aspects of the original implementation or address inadequacies found through litigation)

Linear approaches fail for five main reasons

- **focus on the timing rather than quality of a decision**. Timing rather than quality becomes the essence of the decision. Agencies push forward to meet deadlines, use overly structured environmental analyses. Interested parties pressured to make hurried stances. Creates competitive, adversarial and distrustful environment. Creates a more cursory analysis and less time for consideration of more creative decision alternatives (some of which interested parties could provide).

- **consider ecological science paramount to social values and equity**. Process largely considers ecological science alone. Agencies feel that ecological science will provide the answer and protect in litigation. To reach faster decision with a sense of quality information, agencies rely on government-selected experts to provide scientific input. This does not address issues of social values, equity, justice and conflict that made the problem wicked to begin with. Must instead be a combo.
- **ignore the underlying conflict of human values (which are often why the issue is wicked to begin with).** decision-making processes cannot produce effective solutions in situations where conflicting goals and values predominate
- **lack any dialogue *among* interested partie**s. There is never a true 'dialogue' among interested parties. Conflict divides people (parties). Parties become more and more polarized, separated and distrustful of each other. When there is no dialogue then there is no true understanding. Parties are forced hold strong 'positions.' Positions are the public stance on what the party feels is the ultimate solution. Positions become the face of the party. Positions then overshadow interests. 'Interests' are what the party believes in, their values, what they hold as important. Positions do not equal interests. Positions hide the underlying interest. Prevents the ability to truly identify shared interests. Need to get to the shared interests.

Does not engage interested parties in decision making.

- Agencies need to develop processes and decision environments that openly address conflict, see it as an opportunity for growth and consider the five elements above.
- Agencies need to study the conflict (either in advance or take a break to do this during an already moving process) to understand the underlying factors of the conflict.
- Should include a rigorous investigation into the reasons for the conflict among interested parties rather than just a focus on preferences for policy and science needs. should include an assessment of basic values, problem definition, perceptions (of the issue and other interested parties), policy preferences and even opinions on how the specific collaborative process should be designed
- Such an understanding, especially when done early in the decision making process, will provide the context to best understand the reasons for the conflict and how to design a process to address and transform it.
- Through such a process interested parties can be presented with this data and gain a better understand the implications of their decisions on each other.
- Processes can be designed within the parameters of regulatory requirements (including timing) that fully integrate parties into the decision process so that they can better understand all sides of the issue, have a greater opportunity to explain their viewpoints and listen to those of others, consider the available information

collaboratively (and collectively identify means to address missing information), and feel they have truly influenced the direction of a decision.

- The conflict has to be understood at some level by all participants so that they can gain a much greater understanding of the reasoning, beliefs and potential areas of compromise with fellow stakeholders. It is only then that steps can be taken to transform the group and its conflict toward effective action, decisions and outcomes.
- Such involvement can actually lead parties to compromise and even willingness to accept decisions not fully aligned with their values and viewpoints.
- Such an approach is consistent with theories of participatory democracy (critical theory and pluralism), procedural justice and social capital. It can promote social capitol and trust that move participants toward coordination and cooperation for mutual benefit.
- Such an approach also shows participants that there are better ways to do things rather than constant battles and litigation.

A collaborative process can cost an agency less than the traditional approach

- A collaborate action effort will no doubt cost time and money.
- The payoff is not immediate and has to be seen as a longer term investment.
- costs should be considered in light of agency time, resources and costs spent on failed decision making processes, repeated cycles of litigation, requirements to redo complex (and costly) analyses, forgone public and private investments when decisions are not made timely or are appealed, deepening antagonism and hostility

repeatedly reinforced among interested parties through failed processes, and costly impacts to natural resources as protective actions are stymied by an inability to act on decisions.

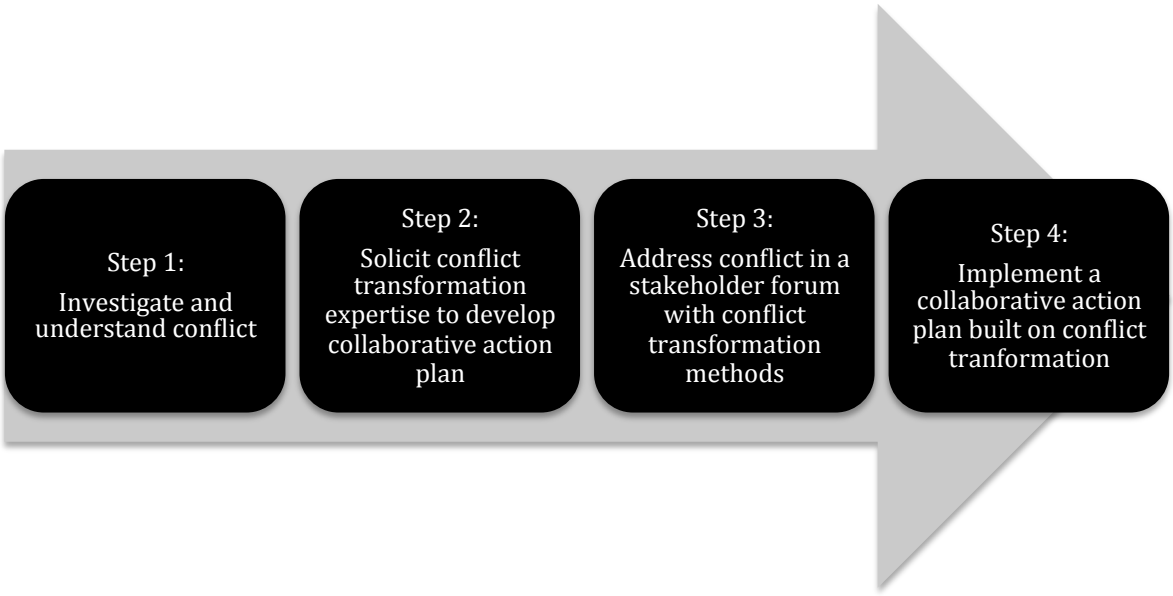
- Benefits of collaborative processes, that can ultimately reduce costs, include social learning, gains in social capital (i.e., trust and education gained by both government and participants from the process which may in fact carry over to other issues and decisions), the probability of more effective decisions (and thus more focused, effective policies versus an ongoing cycle of revisiting the same decision), and reduction in litigation costs (assuming potential litigants are participants in the process). Benefits also include more effective decisions that positively advance natural resource protection.

Some agencies have moved toward more collaborative approaches but these fall short of truly understanding and addressing the conflict

- Most existing federal collaborative efforts scratch the surface.
- Although helpful these approaches are not sufficient to understand the conflict and the interplay of interested party values, especially for an issue that has a history of controversy and where parties have maintained opposing stances for long periods of time.
- While this type of research provides insight into preferred policy approaches and may gain an understanding of the stances of the various interested parties and potential areas of disagreement and agreement, it does little to provide the context and reasoning behind the conflict.

- The conflict therefore cannot be appropriately understood and addressed with interested parties and the potential for transforming the conflict is greatly minimized.
- Without a rigorous analysis of the underlying conflict, the conflict cannot be adequately addressed and will continue to undermine any collaborative process and ultimately any decision.
- A typical 'situation assessment' phase generally proceeds federal collaborative efforts. Addresses (1) the range of interested parties, (2) key issues and concerns parties believe should be addressed by a dialogue to make it meaningful, (3) areas of controversy, (4) areas of agreement or potential agreement, (5) information and expertise needed for a well-informed dialogue, (6) the level of interest in and support for such a dialogue; and (7) any external factors that could affect the success of a dialogue
- Interested parties are interviewed. These interviews are focused on assessing whether a collaborative initiative should be undertaken (i.e., parties are willing to participate, the probability of success and how the effort should be designed), feedback on policy preferences.
- Often agencies convene groups of interested parties and, rather than address the conflict, forge ahead into where potential solutions (decisions) may lie

There are four overarching steps to effective collaborative action efforts



- process is not necessarily new in concept or practice (i.e., stakeholder solicitation, conflict resolution, collaborative action),
- differs in the level of emphasis and rigor placed on understanding and addressing the underlying conflict

Agencies must undertake a much more *rigorous* analysis of the underlying conflict and how this information can inform, empower and transform a collaborative effort into longer-term, acceptable group thinking and should entail qualitative research approaches that uncover the *context and reasoning* behind the conflict (i.e., values and problem definitions, perceptions and trust of other interested parties; perceptions of self).

- qualitative research, especially through the use of interviews, allows interested parties more opportunity and time to explicitly and more thoroughly state their perspectives in a one-on-one, private situation. Provides anonymity and level of comfort to allow individuals to move from their more rigid public stances to more individual perspectives and self-thinking

- Results can then be used to address the conflict in an open forum(s), such as described in Step 3, where conflict transformation methods can work throughout the process (Steps 3 and 4) to address the conflict, create opportunities to build trust and, in a very directed way, begin moving participants to group versus individual thought and ultimately compromise and acceptance.

Agencies are not typically receptive or capable of promoting such processes

- agencies may be reluctant to allow external interested parties to be part of the decision-making process. fears of losing control or not reaching timely decisions. perceptions that there is little hope that interested parties would be able to reach acceptable decisions together.
- Agencies may feel they do not have the time or resources to move toward this change.
- agencies do not have expertise in conflict resolution or transformation techniques and collaborative action design.
- Resources would be well spent to engage outside expertise in these areas from start to finish.

There is a distinction between conflict resolution and conflict transformation. Where collaborative, agencies only implement resolution-oriented approaches for environmental issues. Conflict transformation processes are needed for wicked environmental issues.

- There is an important distinction between conflict transformation and conflict resolution (often also called conflict management).

- Conflict resolution is most broadly defined as intervention aimed at alleviating or eliminating conflict through conciliation. It is aimed at finding workable solutions to environmental problems or issues. Resolution implies that the dispute can be resolved in the short-term and participants and the process can be controlled. The goal of conflict resolution is to develop a mutually acceptable settlement of the immediate dispute. It often involves use of a third party mediator that is focused on this end goal and exerts control on the process and substance of the discussion. Although all decisions are ultimately left to the participants, the mediator plays a large part in crafting terms and obtaining agreements. The mediator focuses on areas of consensus, resolvable issues and may avoid areas of disagreement where consensus is less likely.
- Conflict resolution (i.e., settlement-oriented processes) do not lead to empowerment and recognition as they tend to ignore the relationship issues in favor of the narrower and more concrete interests.
- Conflict transformation theory reflects a better understanding of the nature of conflict itself and the relationship among participants. It does not seek to resolve the immediate problem or control conflict but rather to recognize the conflict as a natural social occurrence and address it within the dialogue. Transformative practices: (1) view disputes as dynamic and rooted in basic human needs; (2) strive toward creation of sustainable relationships between participants; (3) emphasize relatedness and shared responsibility for common interests; (4) address issues currently overlooked (e.g., power struggles); and (5) promote

inclusiveness, the degree of improvement in individual and group self-understandings, and in their ability to deal with future disputes.

- conflict transformation process then openly addressing perceptions of issues, actions, problem definition and other people or groups and so that each group gains a relatively accurate understanding of the others. This transforms personal relationships that can then facilitate transforming the group social system. Once this understanding is achieved, mediation methods can be used to change the way the conflict is expressed and move the dialogue from competition or even aggression to conciliation and attempted cooperation. Mediators will ask questions (usually to encourage empowerment and recognition) but will not direct the process or suggest solutions. Participants are empowered to define their issues and seek their own solutions and can approach the current and future problems with stronger, more open views. The conflict itself becomes less destructive and less of a hindrance to making progress on potential paths forward

	Transformation	**Resolution/Management**
Assumptions on conflict	Opportunity for growth and transformation; long-term process	Problem in need of a short-term solution
Goal of mediation	Facilitate participants' empowerment and recognition	Settlement of dispute
Mediator role	Secondary and responsive to participants; parties are experts with capacity to solve own problems	Mediator is expert; directs problem solving process
Mediator actions	lets parties set process, goals, design ground rules and frame issues; allow parties to take discussions where they want; encourages discussion of all	Takes lead in setting process, goals, ground rules; frames case for discussion; directs discussion and drops issues not amenable to settlement; discourage

	issues (even difficult ones); encourage mutual recognition of all; use past experiences to learn; encourages expression of emotions	discussion of past; avoid parties' emotional statements; use own knowledge to help direct settlement
Mediator focus	Participant interactions, looking to empower and recognize	Participant situation and interests, looking for joint gains and mutually agreeable areas
Use of time	Open-ended; no pre-set stages	Set time limits, encourage parties to move on; establishes stages
Definition of success	Increase in empowerment and recognition (small steps count)	Mutually agreeable settlement

- New territory for the federal government
- public process itself does not promote or encourage opportunities for true emotional vetting or addressing conflict.
- There is sense that emotions make us weaker, interfere with good judgment and reasoning and complicate planning.
- federal officials must remain neutral participants, even though they themselves are also a stakeholder and individually hold assumptions and perceptions of the other parties.
- Modern neuroscience, however, proves that emotions actually make us more effective, are essential to good judgment, speed up reasoning, build trust and connection and provide vital feedback. There is conclusive biological evidence that decision-making is neurologically impossible without being informed by emotions.

Marine Sound

- can be considered a wicked environmental problem
- stakeholders will want to discuss issue with me and will be open, especially given that I have (a) built good relationships and (b) my professional position as a federal manager will give them greater access to discuss their viewpoints and concerns than they normally get
- stakeholders want to find a different way forward
- Anthropogenic sound, or human-made noise, in the ocean environment is an integral part of many human activities critical in supporting continued U.S. economic and social welfare, such as vessel operation for commercial fisheries and the transport of goods/services; exploration and production of both traditional (e.g., oil and gas) and renewable (e,.g., wind and tidal power) energy sources; exercises for military preparedness and national defense; dredging of offshore sand for beach and barrier island improvements (hurricane protection); seismic research for earthquake detection; and even recreational boating (e.g., nature tours, fishing trips, weekend boaters).
- From the perspective of the biological environment, however, anthropogenic sound can equal noise pollution.
- The conflict between economic potential and environmental impacts is central to federal regulation of this issue. What makes it wicked though is the depth and breadth of the conflict.

Stakeholder Diversity and Complexity

Federal regulation of this issue is perceived and defined quite differently across interested parties. Stakeholders engaged on this issue represent diverse backgrounds, philosophies and expertise. They include many federal agencies, such as those mandated with managing marine mammals (the National Marine Fisheries Service, U.S. Fish and Wildlife Service) and those charged with managing sound-producing activities (e.g., BOEM, U.S. Navy, U.S. Geological Survey, National Science Foundation, Army Corp of Engineers). These agencies are challenged with achieving their mission goals in conducting and/or regulating these critical activities while meeting their mandated responsibilities as environmental stewards for the nation. In addition, state agencies are concerned with the effects of sound on their marine mammal resources (especially as much as they may impact tourism or aesthetic activities). Tribal governments (i.e., Makah, Alaska Natives) are concerned over the potential impacts from sound-producing activities on the general environment as well as more indirect impacts to the availability of marine mammals for their subsistence purposes. Native Hawaiians advocate for protective policies for numerous species serving as significant symbols for their culture.

- There are also industry groups whose primary need is to access resources that contribute to the greater good. Many of these industry groups are willing to mitigate activities but charge that mitigations, given their often costly nature, need to be reasonable, effective and proven. Examples of industry groups include, but are not limited to: commercial and recreational shipping; offshore energy

exploration and production; commercial and recreational fishing; tourism (e.g., whale watching).

- Alternatively, there are many environmental non-governmental organizations whose public stances vary greatly. Some, albeit few, are outright opposed to the Federal government authorizing any activities that produce ‘unacceptable’ levels of anthropogenic sound into the marine environment. Others recognize the economic and social values of many of these sound-producing activities but call for the Federal government to better balance economic needs with environmental protection (often through the advocation of various mitigation and monitoring schemes). Many of these groups have taken a position that anthropogenic sound in the ocean is rapidly increasing, is a global threat to marine mammals, and no effective mechanisms exist to regulate and mitigate. They call for Federal agencies to develop and implement a wider, stricter set of mitigation measures, particularly geographic and seasonal restrictions, and technological (or "source-based") improvements.

Scientific complexity and uncertainty

- There is still *considerable* scientific uncertainty regarding the nature and magnitude of the actual impacts of anthropogenic sound, as well as the most appropriate and effective mitigation measures where effects have been demonstrated or are likely. There have been a number of Federal, NGO and academia efforts to close the scientific gap but limited resources and difficulties inherent with researching species in the marine environment have significantly

slowed scientific progress. Further, study results often lead to more questions and differing interpretations on the study's value to scientific progress.

Political and regulatory complexity

- The National Environmental Policy Act, Endangered Species Act and Marine Mammal Protection Act are the main statutory and subsequent regulatory mandates that drive the Federal government's management of anthropogenic sound impacts on marine mammals. Each statute requires agencies to implement a more conservative approach in decision-making for activities where uncertainty on effects exists (i.e., the precautionary principle). Given the level of uncertainty on this issue, this has led to the application of more restrictive mitigation and monitoring measures for many sound-producing activities that are built mainly on what seems logical rather than known effectiveness.
- Compounding the issues complexity is the fact that many of the activities causing concern over impacts to marine mammals are largely related to activities important to the welfare and economic protection of the U.S. For example, naval sonars have been developed for the main purpose of being able to detect the presence of very quiet foreign submarines. The noise some of these sonars produce, however, has been implicated in several incidences of strandings as well as behavioral disruptions. Seismic surveys are used to locate potential hydrocarbon reserves, site offshore infrastructure (drilling and production rigs as well as wind turbine placements) and are also essential to many actions that lengthen and continually assess the integrity and safety of a producing well.

Behind all of these actions are federal laws encouraging their conduct and facilitation. It is unclear how these various statutes relate to environmental law.

- At the same time, Federal agencies must make decisions in a timely fashion. Agencies cannot wait for the science to fill the information gaps nor can the industries or militaries awaiting authorizations to conduct activities (e.g., oil and gas, commercial shipping, U.S. Navy). For the most part, the industries being regulated on this issue are considerably large and influential (i.e., effective lobbying). They understandably want a reasonable Federal decision in a timely fashion and will exert their political influences when needed. Politicians also need to weigh the advancement of certain national issues (e.g. increased domestic energy production or military readiness) within the context of potential, scientifically uncertain and precautious regulation of the noise issue.
- Over the last decade, U.S. government regulators have attempted various approaches to bring stakeholders together toward a common path forward (e.g., 2004-2005 Federal Advisory Committee on Acoustic Impacts on Marine Mammals but these efforts have only been minimally successful, as evidenced by increasing litigation, repeated failed attempts to reach a satisfactory conclusion and relatively stagnant government policies. Largely, the regulatory approach to date has focused on improving scientific knowledge, precautionary regulating to avoid increasing controversy and, to a lesser extent, improving stakeholder understanding of the issue. Decisions have been made largely in a linear fashion. Little has been done to look beyond the scientific uncertainty, which is likely to

remain for some time to come, and integrate the added and important role of a substantial understanding and vetting of interested party input early in the regulatory decision-making process itself.

- Stakeholders are divided into groups, some working together and others working apart.

Coded during data analysis

The following biases were coded during the data analyses (i.e., where I saw myself interjecting a comment that reflected a bias) and provide some additional examples of where research bias may exist.

Coded Researcher Bias
because clearly Navy has done a great deal of really great work on the noise issue.
But, you know, there are definitely personalities that are harder to move in whatever direction. So, that is just yet another, another aspect of this to kind of wade through and figure out.
It's also interesting to me that over time now we're even seeing graduate programs on ocean noise. It's incredible. Which says to me, "This issue isn't going to go anywhere anytime? It's not going away."
Interviewer: Before I came to NOAA I was at the National Wildlife Federation, and I think it depends on the NGO that you're a part of. If you look at a conservation organization versus an environmental organization, you would see there's a different tact and approach.
it appears that that is, that there is just some very polarized opposites, and part of my goal is to figure out if that is actually the case or not.
The Army Corps is never at the table. They purposely do not engage or want to engage in noise discussions from the leadership level, so they are never at the table really talking about any of this either.
Interviewer: And I think some of their tactics initially were because nobody was listening. Nobody was doing anything. And so they come and they did not know. They did not have the information to understand it, but knew there were many issues. There is a sense to be worried. The question is should the tactic change over time.
No, it's a very good question. I think the military would feel the same way as far as it's at its core, an anti-military, big, bad military kind of an approach versus truly being about the noise issue. I wouldn't say that all people in the NGO's would agree with either statement, but I think that there's definitely people like yourself and many others actually out there that do believe that's at the core of this.
You see the statutes and the regulations themselves being more of the challenge when you are dealing with the government. Personally, I think it is going to take something really big to open that MMPA back up again. I do not know it might happen. In the meantime there is a lot of challenges there I would agree that you are stuck with because it is the statute drives small numbers, you have to come up with a number.
Interviewer: And, that was a little bit. There had been some other indication, the same in Madagascar. They were legitimately trying to get to an answer. It was hard. They put a lot of their professional capital into pursuing this. The end result is a process that didn't quite seem true and fair. And so, what's their motivation going to be to look at things again?
I think a big part of this issue is the very kind of linear approach that tends to especially happen in the federal government. It tends to be very focused on a particular project. And it takes time to get through it. It's getting a little more so kind of iterative and adaptive. There's such pressure to make a decision versus looking at the larger picture. And I think that's obviously not helping an issue like noise that really cannot be managed on a project by project basis.
Part of me kind of thinks that maybe folks weren't really ready for something like that. Or the structure of a FACA process itself or how it was designed didn't really…it broke some barriers but it didn't really go far enough.
So, in some ways I feel like we are using science as a crutch, and I am not, because, you know, I mean, I started off with, as a biologist and all. I mean, the science is extremely important on this issue and needs to be continued. But, I feel like a lot of people are thinking the science is going to help make this issue more tractable, and reduce the conflict, and that we are using it kind of a crutch a bit.

Interviewer: It's not to say that people are going to come to an agreement or change their particular perceptions or beliefs. You won't change the values. That's something that people have. People have their values for different reasons, but by listening and understanding more, you probably open up areas of not even a compromise, but where agreements can be reached that you wouldn't open up without having that level of understanding.

Interviewer: Which is a hard part of all of this because then you get to government. Then you are somewhat—in many ways, particularly in the US, I think, you are a) you are at the intersection of a lot of information and a lot of different opinions and you really never have the full time and ability to like really think through. And b) you are trying not to come across—you are trying not to let your biases show. It is hard to not do that. But your job is to basically do your analysis, but to hear. But you do not really dialogue.

Interviewer: Right, right. No, that's definitely--I did try it just as an aside to do a couple of--I thought about having some sort of--not a FACA--but some sort of advisory group to give us opinions to kind of follow along the way to add transparency and to give input. And yeah, internally in the gulf they were like uh-uh. You know, it's all about--because we do have litigation with the time clock and that does make it harder to sort of spread your wings a bit and really kind of get something more productive, more effective I guess, so.

Sometimes one of the things that has struck me, and I am initially a biologist by training, and then went into the policy realm. But I look at the science and what I often see is, I feel it is very important and needs to progress, but I often see where even the results of a particular study are interpreted quite differently by different people. And sometimes I wonder if we are focusing too heavily on the science as a means to make this issue more tractable and that has sort of led us to, and sort of allowed the conflict to kind of still remain

Interviewer: I mean, that is something that it is interesting. Because I hear, obviously there are different goals. But I hear most everybody say the same thing. That the MMPA needs to be amended to provide for a structure that can handle the noise issue. People may disagree about what parts of it are a problem. But so far nobody has… But nobody has disagreed about the fact that the way it is structured now, it does not work.

Interviewer: Academics don't really come out during the comment periods or engage in proving that analysis. And so I would agree. There does seem to be a need to connect that information transfer.

Interviewer: I suspect that despite what I might have said before I think as BOEM gets hit I think it is the responsibility of all the parties to better inform the public and the media. Some parties are doing that in whatever way they feel is the way they need to, but I think the government probably does need to play a better role. In some ways if ENGOs are saying one thing and oil and gas is saying another probably does not know what to believe. But if the government says it they still may not believe it, but maybe it seems like a more acceptable. I do not know but I think government does have to start.

Interviewer: Okay. That is…you know the reason I ask that question too is because I think that's often not part of the design of a process. I think in the FACA it could have gone maybe a lot further than it did. I think folks mainly got to understand each other often through the coffee talk and the dinners and the breakfasts. But, I suspect—and you can correct me if I'm wrong—but the way that the effort…the process is designed actually when you're in the room together, doesn't really get at building the relationships like it could.

Interviewer: So, I wonder if that's something that could be a very powerful tool? You see actually in like the peace conflict fields, not that they have the market cornered on that by any means, but there's certainly more of an emphasis on relationship before you're trying to solve very difficult problems. So, where I think we…we flip it around partly because you know it's a different thing. It's not our livelihood. I mean it is, but it's not …it's our professional capacity in many ways even though we're all very tied to it personally. But, we tend to try to solve the problems before we develop the relationships.

Interviewer: I think that that's a good point. I think that to me, that link is what's obviously missing as well. Until you do that, and until you get people to the point where you've built their capacity to really work together and listen to each other, we're just going to keep going around and around, so I find that interesting with the ATOC because then I definitely have figured that was sort of the point where things, if you could look at the noise issues being a little linear as far as interest in different segments, it seems like after ATOC, it just blossomed off into all different kinds of different directions.

Interviewer: Okay. No, that is, I will give you my personal response to what you said, which is I think that is probably right on target. And, that is sort of the feedback I am looking for, is just where people see the most, where perhaps, where emphasis is needed in order to get the most progress in the end. And, I am getting different, I am getting a lot of people that think that the substance is going to ultimately drive the ability to improve outcomes. And, I guess one of the things I am trying to look at through my project is whether or not it is the relationships that perhaps are hindering those improved outcomes at this point versus the substance.

Interviewer: And one of the things—I am glad you brought that up because I have picked up on that from something one or two other folks have said and I think it has elements of some of the things that have been in the back of my mind as I was developing my proposal. And that is sort of the relationship component. And you can tell me if you had a different impression. But that workshop in particular and a lot of the things that Okeanos did, there was a lot of space within the constructs of the effort for people to kind of get to know each other better. And kind of get to know each other as individuals versus an organizational stance. Was that part of the reason you thought it was—

I think you're absolutely right, and that's sort of my take. In the government pretty much everybody thinks that you're not doing it right. You get used to that. But I think for you and me with our personalities we can handle that. What I realize now is that there are quite a few people out there who can't. To me it's like, "Okay. Yes, we're all at different levels and believe in what we do for whatever reason," whatever our particular niche is or role. But it's not like you're attacking my family. But for some people it is.

Interviewer: And I think that's an element of the transformation side where you would…and I will say this, you know when I wrote the proposal, it seemed like gosh, there could be a lot of potential here. I'm at the point where I think that's still probably the case, but it's not quite so clear. But, I think what it says is that kind of openly addressing a conflict is really about getting past that surface discussion and into being more candid. And with that, often people will start to be a bit more trustful with each other, although it will be guarded for a period of time and will be lost if an action is taken that loses it. Or, it will be grown if you know actions are taken that continue to support the trust.

Interviewer: One of the other things that strikes me is particularly when you look at NMFS and even MMS up until most recently, you have a lot of biologists and you have a few bio-acousticians, but you don't really have any acousticians who truly understand noise and how it actually behaves in the water from a purely physics and field measurement perspective. I think that that is one huge challenge.

I think that's the crux of it. Where I can tell that there's been the greatest amount of an increase in conflict, and I'm talking about over time, so from the beginning of this, where there's things that come out in the media from one group or another. People are feeling like they're either being villanized or they're being criticized for just not knowing. You're not familiar enough with the issue. You just don't know. That has such a power over some people. But there's also been instances where it started that way with some folks and they have gotten to like you said, they got to know the person behind it and realize that there are probably individuals that you could work with, and together probably make some changes, but not maybe what any one person wants completely.

Well, that is good, and I have to say, I had the, I sort of had the same evolution as you did on this issue. Because, my background is, I am a biologist who got into policy, and through my PhD program, I actually ended up taking, I think, two courses that were focused on conflict resolution. The first one was more peace issues, which was very interesting. The second one was more conservation-focused, and I remember distinctly the first day, it was all about science will never answer the issue. It is important, it needs to happen, but it is all about the conflict between the people that makes it so challenging. And, I am like, nah, I did not buy it. But, I did actually progress, I guess, in my mind. By the end of it, I was totally understanding what exactly was meant by that.

Another aspect of it is that it occurs to me that my best opportunities for building a relationship with people, particularly when you're thinking of meetings is sort of the coffee breaks and the dinners. Yet, we don't really build in an actual—at least my experience in the US is that we don't really build an actual process…build into the process itself more of those opportunities. So, not that everybody has to hold hands around a circle and sing Kum Ba Yah, but you know if the process itself had a little more than just your icebreaker and your…but things where people could get to know each other a little bit more on an individual basis and build a little bit, overtime, build some more trust they may be more willing to listen more when it came to the substantial issues where there was a lot of conflict.

Interviewer: Well what you have just from a purely policy perspective and from the way that the act was created, you have the part that deals with fisheries and then a part that deals sort of with everything else. A structure for noise that is similar to what is done for fisheries where basically you have goals that you're setting. You're not really looking at the individual. You're sort of looking at the populations would be way more appropriate for this issue and probably direct some of the science questions where they need to be a bit more.

At least from the government I can definitely tell you we feel like we're on the decision carousel all the time. We're just spinning. I think you can spin as long as you are still moving forward and you're eventually getting further down the path. There is an interagency effort under the National Ocean Policy that's just started up. It's got fourteen federal agencies on it. Not all of them, but more than there has been before. That group is charged with meeting over this next year to try to look at this issue from the federal government perspective, looking at where the science is, where it's going, looking at stakeholder engagement, looking at recommendations for database portals or whatever it might be. And if this dissertation research can come out with something that seems appropriate, to either forward it to that group or to anybody to try to test out.

And you know, it is interesting when you look at the statute, I think that those – the aspects of it that do talk to optimal, sustainable population, there is a lot of the MMPA and the ESA that do that. But then, when the small numbers issue comes into play, it forces it down to the other level. And one thing that I have heard I think across the board, and I am not done, but I have heard from a lot of - at least I have heard it from most every category is that folks do not believe that the MMPA as it is structured really works on the noise issue. Or another way of saying that is that the way the MMPA is structured, they did not ever think that noise would be of a concern, and that there needs to be a separate way to address noise. But the problem is that there are certainly folks who are reluctant to open that up for reauthorization for fear of what might get done to it if that happens.

Yeah and that—yeah, the litigation is such a—you know, it's hard to know where to fall on that one because I think in some cases it's needed in order to get things—to get attention paid if other approaches haven't worked for that. You know, and in other aspects of it I think it's resulted in stifling creativity and conversation. And so I guess one of the things I'm looking at too in this is just people's opinions on, you know, just on the role of litigation. And then some folks have had a lot of experience with it and others haven't. But you know, I love to see a situation where litigation happened only for those sorts of things that a court needs, really needs, to decide and not because collaboration didn't take place first or this NEPA document didn't cover these three studies, so anyway. Sorry. That's my—I try not to give too much of my own input but I think it's a huge issue to try to figure out how to work with.

Interviewer: we shoved it with so much substance and things you talk about that you did not have a whole lot of opportunity to build the relationship component because you were not really able to have the space to really dig into the different issues. And so, you come out with in the end, with a whole bunch of stuff you do not quite know what to do with and not really a next step and not really an ability to carry it—carry it on.

Interviewer: Because you do wonder, and I know that a lot of industry members feel this way as well as I do as a regulated entity as well as regulator. If there's always that fear of something that you say being used in litigation, does that ever allow for people to truly have a really good dialogue and to sort of get past the public stances, and the walls that have been put up and to see what's behind. I'll tell you one thing that I've learned. I feel like people have been generally fairly upfront with me. There are some very, even with the folks who you would be most concerned about, and who have been most active on suing, there are a lot of similar things in many regards that come our of their mouths in these interviews that I hear in other places too. Yet, we never get to that because in a more public forum, you're cautious. And so, I just wonder how much do you think that the litigation as important of a role as it played, like you said in raising awareness, but do you think that it's a harmful tool at this point?

Interviewer: I would say that probably is what gets the governments attention. Well anytime that people are, any kind of stakeholders are sort of pounding the pavement on a political topic, that gets attention, but I would definitely say that there is a desire not to be in another long settlement or sued because it just sucks up a lot of time. At the same time, there may be some things worth looking at that anybody brings up that are sort of surround the generation of these meetings. I would agree. Like on the quieting technologies, one thing that has been said a lot, and I've talked with a lot of folks in the shipping industry. They've come out with guidelines and the IMO level about quieting technologies. They are just guidelines. Who knows what will come of that. I've had a few good discussions to kind of get a good feel from people involved on the industry side of that. Some of these eNGOs are basically saying well shipping basically hasn't argued the question of if it's a problem. They've sort of moved to quieting technologies instead.

Interviewer: I suspect that in a different way for each group, everybody is probably getting pressure in – For example, I can think of the folks at a table from the energy industry. They would probably be folks who are doing some of the science or are involved in the environmental aspects. They are probably getting pressure internally from purely operational folks or whatever may be the case, to make sure they do not sell out. That is an interesting point you make. I imagine it is probably something most everybody is feeling, albeit from a different angle. One of the things I have heard is that there – I have heard it from enough people so far that it is at least a perception. I am not supporting it as true or untrue. The ENGOs do not have any incentive to make this a more attractive role. Because of a heavy litigation approach and a public campaign approach that many think is still ongoing, there is a huge hesitancy to want to provide information or speak openly, the letting the camel's nose under the tent kind of thing. To me, that is another challenge, real or not. I think people are feeling it.

Interviewer: Yeah and you know one thing to say on shipping and I haven't really wrapped my mind around this to know enough you know, so what you'll hear typically an eNGO say about shipping is that there is in fact a lot going on at the IMO level with like the US chamber of shipping and you know you may hear something along the lines of -- and this is not from everybody but commercial shipping they never really argued whether the issue was there or not, they center around and came to a faster common ground I guess about using quieting technology because for shipping it also made sense from a financial standpoint your quieter ships are going to be cheaper for them and you know that over the -- and so there was a much less adversarial relationship and you know over the years they most recently resulted in some IMO guidelines though on you know quieting technologies for ships. Whether those guidelines come to fruition, they get put into practice you know all that remains to be seen so you have that element of it but at the same time there's also now a way to sue you know shipping companies for not complying.

Interviewer: Yeah like when you're looking at literature that's on one of these big issues like climate change. This goes into my next area of questions. I would say that noise may not be climate change. It's removed a bit from the complexity, but not that far. I think that because of the marine mammal issues there are a lot of people who are engaged, but very few people that actually can understand the issue. It's a global issue. It's not just in one area. But some of the stuff that they've been trying to do is multi stakeholder groups trying to get past the litigation. It's not a consensus approach or anything along those lines. I'll bring out marine mammal FACA in a second. Think about whether there is value in an effort to pull another multi stakeholder group together, perhaps one that meets over a period of time maybe with not an end, but is looking at a longer vision approach to this. Perhaps it contains all the stakeholders, but is a small enough group to deal with that maybe could learn from each other over time and maybe decrease that conflict a bit so that some of the whether it be the science or whatever it is can surface up and actually take hold and help the issue. Knowing what you know about your interactions with these groups do you think that that is possible?

One of the things that I've been sitting and looking back through a lot of this stuff is that it seems like most of the times that multi stakeholder groups have gotten together. The focus has been on trying to answer what are the particular science questions. I think it might be because it's a safer area and its maybe it might be easier to get a general agreement on that. One of the things that I did when I went back was to look at how many of these meetings and workshops were focused purely on science and those that tried to bring in other elements of the conflict. I think you were a part of the shipping one in 2004. That was probably the U.S. centric again; one of the first ones that I saw that I thought had more to it than just trying to come out with a list of science questions at the end. I think largely though that's what the goal is. I know in 2010 there was the workshop that BOEM and the Navy and MMS put on at the Navy Yard. It was too many questions to try to shove into that period of time. So I guess the question that I'm getting at is, how much of this if you were to think of this issue becoming more attractable in the sense of the regulations were clearer, the management was clearer, decisions were more timely, litigation perhaps made or not was less. Do you think that the science questions are the way to go? Are they a part of it? What would be the other part of it?

Interviewer: It is interesting. Because one of the things as I was coming in to this is thinking from a government perspective. and I suspect this is also the same or similar within industry when we go out and we have these meetings and segmented collaborative efforts, or the government sponsors or holds a public meeting, we do not want to touch that emotional component with a ten foot pole. To date there is the process itself inhibits the ability I think for people to completely speak freely and listen as well. One of the things I have been muddling over because I have been talking with these collaborative action folks and many of them deal solely with government issues is when the government tends to be sort of pushes off the emotional component how do you build that into a process. That is one of the things I am really muddling over. If you want to improve the relationships, you can simply have people together at a table, end up breaking bread at lunch or dinner and get to know each other a bit better. Even through to the stage of where you try to elicit and lay out there the different perceptions that people may have and listen and you may find perceptions are actually wrong. My last question I think is do you see if that relationship component is built up a little bit more in this collaborative process what I just described as bringing out the more emotional parts that are people's perceptions of what one groups wants versus another. Do you think that that makes you cringe or do you think that is…

Yes. This is my opinion, but one of the better outcomes of all of this would be if when we have litigation if it can be about the issues a court could decide and not inaction or lack of fully giving a hard look at something, which tends to be what it is. The litigation does slow it down as well, because it's the same thing. There are only so many people that have any level of knowledge in the government on this. You can spend a lot of time in settlements and not trying to actually work a project.

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Biography

Jill K. Lewandowski received her Bachelor of Arts from the University of Virginia in 1993 with a major in biology and a minor in eastern religions. She received her Masters of Science in Environmental Science and Policy from George Mason University in 2006. Jill has worked in the private sector for two non-profit organizations, including the Dolphin Research Center and the National Wildlife Federation. In 2000, she began her U.S. federal government career at NOAA's National Marine Fisheries Service. In 2005, Jill transferred to the Department of Interior's Bureau of Ocean Energy Management where she presently serves as their Chief of Environmental Consultations. During her federal career, Jill has been heavily engaged in marine sound issues from a public policy and management perspective and, through these experiences, became interested in finding alternative, collaborative approaches for dealing with intractable issues like marine sound.