NATIONAL MARINE SANCTUARIES™

Workshop Report on Management Needs to Minimize Vessel Collisions with Whales in the Hawaiian Islands Humpback Whale National Marine Sanctuary and other National Marine Sanctuaries

September 3-5, 2003

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Ocean Service
National Marine Sanctuary Program

NOAA Ocean Service

About this Document

This document is the report from the workshop on *Management Needs to Minimize Vessel Collisions with Whales in the Hawaiian Islands Humpback Whale National Marine Sanctuary and other National Marine Sanctuaries* that occurred on September 3-5, 2003 in Kīhei, Maui, Hawaii.

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Workshop Report on

Management Needs to Minimize Vessel Collisions with Whales in the Hawaiian Islands Humpback Whale National Marine Sanctuary and other National Marine Sanctuaries

September 3-5, 2003

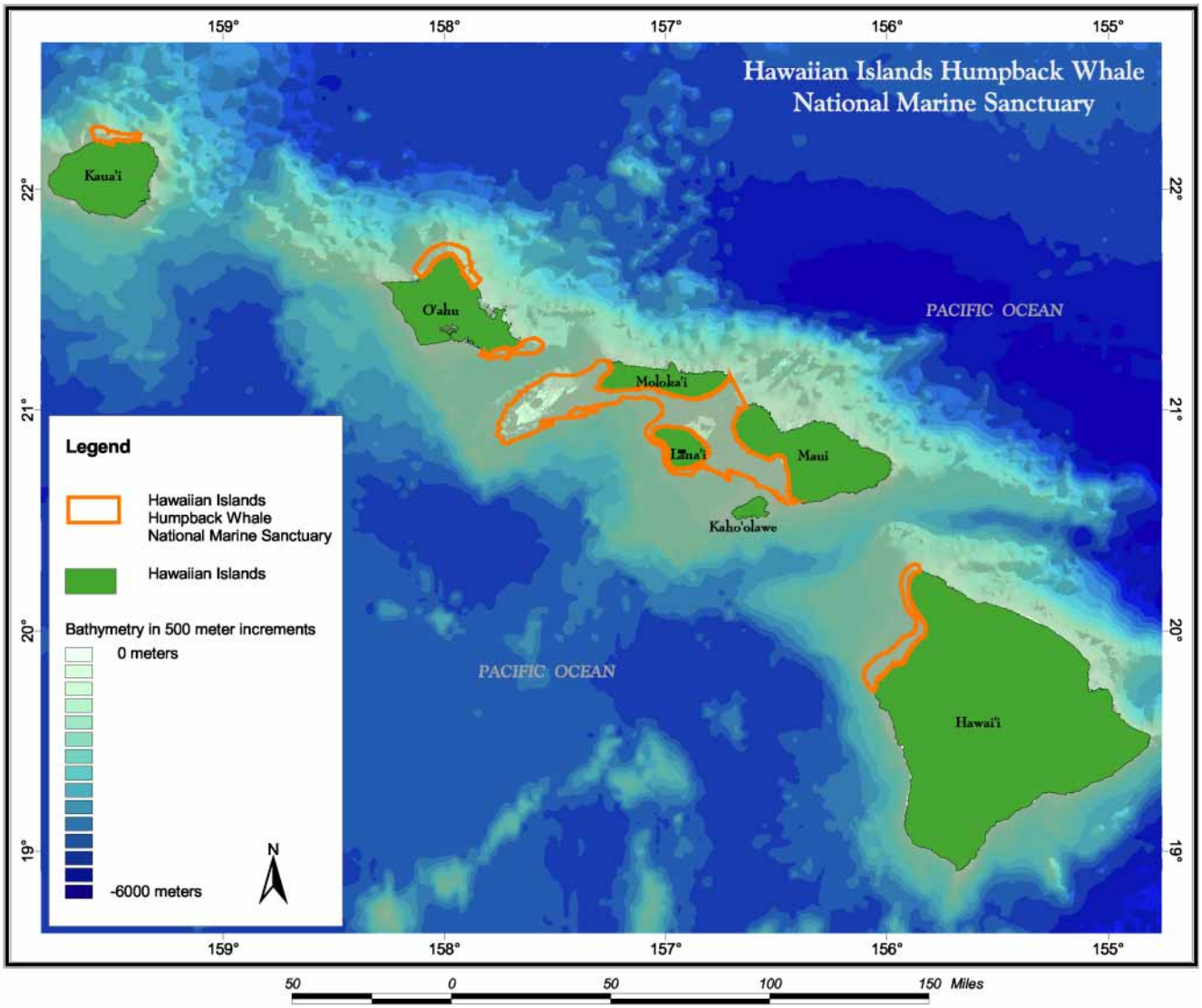
Photo by Dick Lundholm

NATIONAL MARINE SANCTUARIES ™

HAWAIIAN ISLANDS HUMPBACK WHALE

NOAA and the State of Hawai'i

a Partnership for Protection


Hawaiian Islands Humpback Whale
National Marine Sanctuary
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O'ahu
Moloka'i
Lāna'i
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PACIFIC OCEAN
PACIFIC OCEAN
Legend
Hawaiian Islands
Humpback Whale
National Marine Sanctuary
Hawaiian Islands
Bathymetry in 500 meter increments
0 meters
-6000 meters
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50
0
50
100
150 Miles

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NATIONAL MARINE SANCTUARIES

Sanctuary Purpose

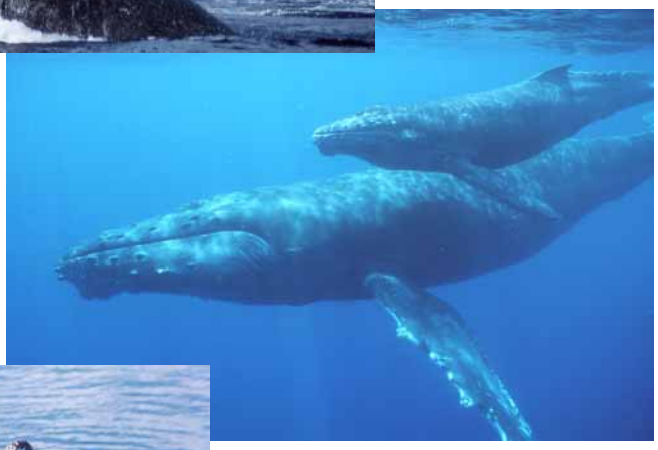
To protect humpback whales and their habitat within the sanctuary;
To educate and interpret for the public the relationship of humpback whales to the Hawaiian Islands marine environment;
To manage human uses that are consistent with the sanctuary;
To provide for the identification of marine resources and ecosystems of national significance for possible inclusion in the sanctuary.

Sanctuary Vision

The sanctuary works collaboratively to sustain a safe and healthy habitat for the North Pacific stock of humpback whales (koholā).

As a community of ocean stewards, the sanctuary strives to achieve a balance of appropriate uses, inspired care taking, enlightened understanding, and effective education to ensure the continued presence of the koholā for future generations.

The sanctuary endeavors to do this with harmony, hope, respect, and aloha o ke kai (love of the sea).



Photos: Doug Perrine/HWRF/Seapics.com/NOAA Fisheries permit #633, 822

Whales count. We are here to address the expressed concern of the Hawaiian Island Humpback Whale National Marine Sanctuary constituency about the threat of ship strike in sanctuary waters.

The first day of the workshop started with statistics and concluded with concerns. We heard about the state of information and knowledge about humpback whales in Hawai'i and the vulnerability of young animals (in particular) to collisions with vessels. We then heard about the larger picture from work with right whales and with humpbacks in Alaska. We heard about vessel design and operations, including details on the up-and-coming hot design for large ferries, the wave-piercing catamaran. The final panel of the day discussed "industry perspectives" which brought to the fore many practical matters regarding commercial and recreational boating operations in Hawai'i Nei.

Throughout the first day of the workshop, tidbits of technology were sprinkled among the reports, observations and opinions to provide a perspective on possible mitigation measures. Here are a few snippets of my notes from Day 1 of the workshop:

Vulnerable but not visible (near surface or at night)
Not all whales are equally vulnerable to vessels
Regulate and educate – the Glacier Bay model
Acoustic alarms may have unintended biological consequences
Spotting and plotting from shore – old technologies still have a role
Unintentional encounters
Intent and prudent/responsible seamanship
Education with registration
Veil of silence and vitally important statistics
Whale density versus dense whales

The Sanctuary Advisory Council needs answers and direction. What must the council do to address the "wessel" issue in Hawai'i? (note: wessel = whales + vessel) Where do we agree and where do we have contention? What should we do and in what order?

Technology (a subject near and dear to my professional heart) certainly can help, but our goal here is not to find "technical" solutions to the wessel problem. We must tackle the issues of whale behavior, whale biology and regulation, too. Look for specific solutions but don't be afraid to say "we don't know enough to make an informed recommendation". Those are three powerful words, I don't know, but they should also spur you to then identify the steps required to fill the information gap.

This workshop is the first step in a chain of action to address the wessel problem. Whales count and what you do today is important. Your efforts will help determine if our first step is a stumble or a significant stride forward.

Mahalo for your time and effort on behalf of the council.

Bill Friedl, Chair
Sanctuary Advisory Council
Vessel Strike Working Group

6700 Kalaniana`ole Highway, Suite 104 Honolulu, Hawai`i 96825 Phone: 397-2651 Fax: 397-2650

Executive Summary

The shallow, warm waters surrounding the main Hawaiian Islands constitute one of the world's most important humpback whale habitats. Approximately two-thirds of the entire North Pacific humpback whale population migrates to Hawaiian waters each winter to engage in calving, nursing and breeding activities. This area is specifically designated as a national marine sanctuary for the protection of Hawai'i's humpback whales.

In Hawai'i, the reports of collisions between vessels and humpback whales appears to be increasing. Although there are very few records of such collisions before the 1990s, at least seven collisions have occurred in Hawaii since 1998, including four that resulted in the death or serious injury of struck whales. Given increasing trends in the numbers of both humpback whales and vessels in Hawaiian waters, it seems likely that the frequency of such collisions will increase in the near future.

To address a growing concern regarding the increased occurrence of collisions between vessels and humpback whales the National Oceanic & Atmospheric Administration's (NOAA) Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) Advisory Council Vessel Strike Working Group and its partners sponsored a workshop to assess ship strike risks to whales in Hawai'i and to identify possible actions to reduce the occurrence of vessel/whale collisions in Hawaiian waters and throughout the National Marine Sanctuary (NMS) System. The Working Group's aim is to stay ahead of the issue of vessel and whale collision in view of such a dynamic environment.

Primary goals of the meeting were:

· To review available information on the risks of vessels hitting whales and factors affecting the magnitude of those risks,

· To identify possible measures to reduce the risk of vessel collisions with whales for different vessel classes,

· Review existing regulations and assess effectiveness of enforcement policy relating to vessel-whale encounters and collisions in sanctuary waters,

· Prepare a summary report with preliminary recommendations for the Chair of NOAA's Hawaiian Islands Humpback Whale NMS Advisory Council Vessel Strike Working Group on (1) whether the issue of vessel collisions with marine mammals in national marine sanctuaries warrants specific attention by NMS Program and (2) if so, determine the research, management, and regulatory actions that should be taken in national marine sanctuaries, in collaboration with other state, Federal and tribal agencies with management authority over marine mammals.

This report fulfills the goals of the meeting. Participants in the workshop included more than 80 resource managers, scientists and representatives of the marine community. Presentations on day one covered a variety of topics including: the distribution, abundance and behavior of humpback whales in Hawai'i; the occurrence of collisions between vessels and whales; why those collisions occur; options for reducing collisions; and the economic importance of vessel operations in Hawaiian waters. The second day featured breakout group sessions dedicated to identifying possible actions to reduce the occurrence of vessel-whale collision in Hawaiian waters and throughout the National Marine Sanctuary System. Essentially, the

workshop was charged with placing the "aids to navigation" for Hawaiian waters to provide a base for managers and agencies addressing the critical issue of whale-vessel interaction and collisions.

Conclusion

Discussions and presentations during the workshop generally suggest that vessel collisions with whales is an issue to be aware of in Hawaiian waters, but it is not a critical problem at the present time. However, participants strongly support efforts to monitor the various parameters to improve management of the issue, including conducting assessments of whale population growth, whale behavior trends and increased ship traffic in waters surrounding the Hawaiian Islands. Improving data collection and storage of information on the occurrence of vessel strikes and "near misses" with whales was also widely supported. In addition, the participants were also strongly in favor of increased education and outreach efforts as an important management tool to decreasing the incidence of whale vessel collisions.

Since the workshop was held in September of 2003, there have been three reported vessel-whale interactions that occurred between December 2003 and February 2004.

Acknowledgements

Stephen Latimer and Karen Moore of the USDA Graduate School for coordinating the workshop logistics

Tom Mitrano and Kathy Bryant from Banyan Alliances Services for facilitating the workshop

Valerie Song for writing the workshop report

Outrigger Hotels and Resorts

Sanctuary Advisory Council Vessel Strike Working Group

Workshop Steering Committee:
Brad Barr, Jim Coon, Bill Friedl, Dale Hazelhurst, David Laist, Jack Laufer, Greg Silber, Jeff Walters, Reg White

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1. Introduction

1.1 Background

In Hawai'i, the reports of collisions between vessels and humpback whales appears to be increasing. Although there are very few records of such collisions before the 1990s, at least seven collisions have occurred in Hawai'i since 1998, including four that resulted in the death or serious injury of struck whales. Given increasing trends in the numbers of both humpback whales[1] and vessels[2] in Hawaiian waters, it seems likely that the frequency of such collisions will increase in the future.

The convergence of three significant elements—the increase in vessel traffic, vessel speed and the growing humpback whale population—fueled a rising concern among the technical and academic communities and the general public. This concern prompted the National Oceanic & Atmospheric Administration's (NOAA) Hawaiian Islands Humpback Whale National Marine Sanctuary (HIHWNMS) Advisory Council Vessel Strike Working Group and its partners to sponsor a workshop to assess ship strike risks to whales in Hawai'i and to identify possible actions to reduce the occurrence of vessel/whale collisions in Hawaiian waters and throughout the National Marine Sanctuary System. The Working Group's aim is to stay ahead of the issue of vessel and whale collision in view of such a dynamic environment.

Day 1 of the workshop started with presentations by the panels.

1.2 Purpose of the Workshop

Resource managers, scientists, industry leaders, and representatives of the marine community were invited to share their knowledge, experience and expertise to articulate approaches on how to minimize and mitigate encounters (See Appendix B for Participant List). They would offer new perspectives on old subjects, examine best practices and topics that deserve future work, and focus on the development of a data system where incidents could be reported without retribution. Recommendations from the workshop could ultimately shape future policy.

Primary goals of the meeting were:

To review available information on the risks of vessels hitting whales and factors affecting the magnitude of those risks

To identify possible measures to reduce the risk of vessel collisions with whales for different vessel classes

Review effectiveness of existing regulations relating to whale encounters and collisions in Hawaiian waters

To prepare a summary report with preliminary recommendations for the Chair of NOAA's

1. Mobley, J. et al. 1993-2003.Hawaii Marine Mammal Surveys.
2. Rice, T. 2003. Vessels Operating in Hawaii. Report to HIHWNMS.

Hawaiian Islands Humpback Whale NMS Advisory Council Vessel Strike Working Group on (1) whether the issue of vessel collisions with marine mammals in national marine sanctuaries warrants specific attention by NMS Program and (2) if so, determine the research, management, and regulatory actions that should be taken in national marine sanctuaries, in collaboration with other state, Federal and tribal agencies with management authority over marine mammals.

The HIHWNMS Working Group will deliver the findings from the workshop to the Sanctuary Advisory Council. The Council will then deliberate upon the recommendations and furnish their opinions to the HIHWNMS Sanctuary Manager for consideration of future actions.

2. Methodology

2.1 General Approach

The workshop was scheduled for three days; the third day which focused on national issues was optional. The workshop agenda is attached (see Appendix A).

Participants included various government and industry representatives.

Day 1 consisted of four facilitated plenary groups. Speakers were asked to summarize information on relevant topics including: the distribution, abundance, and behavior of humpback whales in Hawaiʻi; the response of whales to vessels and vessel noise and technological options for preventing ship strikes (e.g., acoustic alarms); the occurrence of ship collisions in Hawaiʻi, Alaska, and elsewhere and factors related to those collisions; actions that have been taken and planned to mitigate collisions between North Atlantic right whales and ships; patterns and plans concerning commercial and recreational vessel traffic in Hawaiʻi, including plans to develop a high-speed inter-island ferry service; the characteristics, constraints, and economic importance of vessel operations in Hawaiian waters; and the relevant legal authorities and enforcement efforts for implementing related mitigation measures.

On Day 2, working groups were formed to consider possible means of reducing collision risks with various types and classes of vessels. These groups were asked to identify and assess possible actions that vessel operators and resource managers might undertake to reduce the likelihood of whales being struck, the most appropriate means of implementing actions that are deemed appropriate (e.g., by public education and outreach, voluntary participation programs, regulations, etc.), and possible research and monitoring needs. In addition, participants were asked to consider what policies and actions, if any, the National Marine Sanctuary Program should develop to guide research, management and regulatory actions within units of the National Marine Sanctuary System to minimize ship strike risks.

Three working groups were created based on vessel class. These were:

Working Group 1 – Large commercial vessels (e.g., cargo vessels, cruise ships, and inter-island transport vessels)

Working Group 2 – Commercial passenger and support vessels operating on a daily

basis in near shore waters of Hawai'i (e.g., commercial whale watching vessels, dinner cruise vessels, dive, snorkel, parasail, commercial sportfishing, and sail boats, i.e. vessels covered by 46 CFR Subchapters C, K, T)

Working Group 3 — Private recreation vessels

2.2 Day 1: Plenary Sessions

The morning session of the plenary provided a copious amount of information for participants that ranged from Hawaii specific information to a global perspective of whale research and vessel/whale interaction in other areas. The afternoon session proved similarly informative with speakers covering vessel trends and design issues as well as industry perspectives and considerations.

Due to the ambitious agenda, the pace of the day's session was extremely rapid, and the moderator kept a rigorous, yet evenly flowing program. Each panel consisted of four to six speakers who were allotted 10 minutes each for their presentations. A question and answer period that followed each panel was fixed at 30 minutes. The result of such a full schedule was a comprehensive overview of the problem that provided a substantial foundation for Day 2's activities.

A brief description follows of the four plenary sessions and their objectives. Speakers and key presentation points are detailed in Appendix C.

Panel 1 presented the current situation with humpback whales in Hawai'i.

Panel 1:
Hawai'i-focused Information on Whale Distribution, Collisions, Mitigation Measures and Regulations: What is happening in Hawaii now?
Objective: Provide information on distribution, collisions and mitigation strategies within Hawaiian waters.

Whale Distribution in Hawai'i and the Use of Radar
Joseph R. Mobley, Ph.D.

Historical Evidence of Whale/Vessel Collisions in Hawaiian Waters (1975 – present)
Marc Lammers, Ph.D.; Adam Pack, Ph.D.; and Lisa Davis

Social Groupings of Whales in Hawai'i and Vulnerability to Ship Strikes
Louis Herman, Ph.D. and Elia Herman

Vulnerability of Humpback Whale Calves to Vessel Collisions
David Matilla

Current Regulations and Enforcement
Paul Newman

Panel 2:
The Global Perspective: What can we learn from whale research and vessel/whale interaction in other areas?
Objective: Gather information about whale behavior, vulnerability, and vessel interaction that can contribute to developing specific avoidance and mitigation measures in Hawai'i. Discuss unintentional collisions and incident reporting methods elsewhere.

North Atlantic Right Whales (Eubalaena glacialis) Ignore Ships but Respond to Alerting Signals
Doug P. Nowacek, Peter Tyack, and Mark Johnson

Available Information on Collisions Between Vessels and Whales Worldwide
David Laist

Ship Strikes and Right Whales: Approaches to Reducing the Threat
Greg Silber

Acoustic Studies and Management of Vessel Speeds in Glacier Bay National Park
Christine Gabriele

Issues Related to Vessel Collisions with Whales in Southeastern Alaska
Jan Straley

International Law Considerations
Lindy S. Johnson

Panel 2 discusses whale and vessel interactions in other areas.

Panel 3:
Vessel Trends, Design Issues and Emerging Mitigation Techniques: What aspects of vessel trends and design effect potential collisions and what types of mitigation strategies are emerging? What about unintentional collisions and incident reporting?
Objective: Review relevant information on vessel operations, vessel design characteristics and vessel management authorities. Identify specific trends that may be more or less problematic for collisions. Identify emerging techniques for mitigation.

Where the Boats Are, Vessel Operations in Hawai'i Waters
Capt. Terry Rice

Incat Vessel Design
Robert Clifford

Inter-island Ferry Operations
Terry White

High Frequency Multibeam Sonar For Whale Shipstrike Avoidance: Target Strength Measurements
Whitlow Au

Panel 4:
Industry Perspectives and Considerations: Economic importance, industry actions for detection and avoidance, vessel considerations, unintentional collisions and incident reporting.
Objective: Review industry experiences and perspectives. Review industry efforts on avoidance and detection. Identify mitigation strategies from an industry perspective. Discuss issue of unintentional collisions and incident reporting.

Importance of Hawai'i's Vital Marine Industries and Vessel Operations
Terry O'Halloran

Industry Perspectives and Considerations
Jack Laufer /Dale Hazlehurst, Capt. Jim Coon, Capt. Reg White, Terry O'Halloran

Industry Perspectives and Considerations
Capt. Jim Coon/Capt. Reg White

2.3 Day 2: Breakout Sessions

Day 2 began with a plenary session during which the Working Group chair, Bill Friedl charged the participants to engage in lively and open discussion aimed at generating useful recommendations, observations, proposals, and ideas, even if not unanimously adopted, that could be useful for consideration by the Working Group, the Sanctuary Advisory Council, and, ultimately, by the sanctuary itself. He emphasized that many areas of discussion would likely not be resolvable, but that was acceptable, so long as participants identified the issues for consideration. As he put it, "I don't know" are three powerful words.

Chris Gabriele presents on humpback whales in Glacier Bay National Park.

Participants then adjourned to three separate and simultaneous small team breakout sessions to be facilitated in separate meeting rooms. The teams were composed to help focus on three separate categories of participants: those with an interest in or with expertise related to large vessel interactions with whales ("Group 1," facilitated by Tom Mitrano, Banyan Alliance Services); those with an interest in commercial and tourism class vessel interactions ("Group 2," facilitated by Kathy Bryant, Banyan Alliance Services); and those with an interest in recreational maritime activities and interactions with whales ("Group 3," facilitated by Brad Barr of NOAA). All teams were directed to focus on the workshop's Day 2 objective, that is, whale-vessel collisions and opportunities to reduce the risk and occurrence of whale vessel strikes in or near the sanctuary.

Because of the limited time allotted to determine recommendations by the end of Day 2, the original structure proposed for the breakout sessions was altered. Rather than the planned daylong sessions, groups reconvened after lunch to discuss their joint proposals. Groups did separate briefly in the afternoon to refine their recommendations, but reassembled again for a final review. The processes for each group are outlined in the Results and Findings section.

Moreover, the approach to the first of two subjects was modified. The morning breakout session was scheduled to concentrate on "*Identifying Strategies on Avoidance and Mitigation.*" Breakout groups were to:

Assess existing and proposed measures in Hawai'i and elsewhere to reduce the likelihood of collisions between vessels and whales;

Identify potential measures to minimize chances of vessels hitting whales in Hawai'i (including education and outreach, policy changes, operator guidelines, improved data reporting and record keeping of known incidents, etc.) and the most appropriate means for implementing those actions deemed most appropriate;

Identify additional data collection needs and research to monitor and mitigate collisions between vessels and humpback whales in Hawai'i.

The second subject was re-classified as Question 3—*Industry Considerations and Evaluating Strategies to Address Unintentional Collisions.* Breakout groups were to:

Discuss industry concerns and vessel limitations and constraints to avoid colliding with humpback whales in Hawai'i. How does the rule influence industry response?

Panel 4 was composed of representatives from the industry.

Discuss industry concerns about unintentional encounters between vessels and whales that may produce enforcement action against the vessel operator.

Identify additional data collection needs and research to monitor and mitigate collisions between vessels and humpback whales in Hawai'i.

Facilitators instead posed three questions: 1) *What are we doing well in Hawai'i now to mitigate or avoid collisions with whales?* 2) *What did we hear on Day 1 of the conference that may show promise in the future to mitigate or avoid collision?* 3) *What are the group's thoughts on the issue of unintentional collisions and reporting?* Discussions within the groups still focused on identifying strategies, but separated them into current practices and short and long-term objectives.

The agenda also specified that a brief morning plenary session would cover *"Common Themes Across Groups."* General remarks did touch on some common themes, but the sheer amount of information presented by the groups precluded any in-depth commentary.

3. Results and Recommendations from Day 2

3.1 Limitations of the Data

Certain problematic areas emerged from the breakout sessions. Underlying questions, basic premises, and the need for definitions surfaced. The subtext under which groups formed their recommendations is crucial to understanding how groups reached their final recommendations.

Unfortunately, it is not possible to fully describe the problem areas for each group, because of the manner in which data was collected on Day 2. However selected key points are described for Working Group 1 (Large commercial vessels) that provide some insight into the discussions that occurred.

Is there a problem at all? Especially for this vessel category, No large ships go through the sanctuary. Although a main impetus for the workshop was the interisland Superferry vessels and forthcoming increase in cruise ships, participants maintained that if the cruise ships did transit the sanctuary, it would probably occur at night, and the ships themselves proceed slowly.

If a concern is high speed vessels in whale resident waters, it must be noted that high speed means different things to different individuals. The group would like documentation to assess if there is a problem for this vessel category and realizes that it will be necessary to develop on-going methods to track it. Although seven collisions have occurred since 1998, what types of vessels were involved?

A problem exists concerning the poor articulation of laws and regulations. Whether the issue is an approach or a strike, legally, the situation is perceived as if it's the same issue. A strike is part of a continuum of vessel/whale interaction, but the language hasn't changed since 1985.

It would also be helpful to define geographic barriers to focus the discussion. Is the workshop looking at vessel/whale collisions in the sanctuary alone or outside of the sanctuary? Once the geographic parameters are delineated, the group can suggest their approaches.

Geographic differences are significant, as Hawaiʻi has different issues than the East Coast. Humpback whales in Hawaiʻi are increasing at a rate of 7% annually whereas right whales (that category of whale most cited in whale/vessel collision presentations) are critically endangered. Whale/vessel collisions in Hawaiʻi are important at the individual whale rather than population level.

What is the definition of a "prudent mariner"?

Terry O'Halloran, an advisory council member, presents as part of panel 4.

Time constraints also served as a major influence on the group process. The complexity of the problem did not lend itself to simplistic solutions. The commitment of participants to debate and discuss the issues was commendable, but necessitated more time than anticipated. The opportunity for cross-sectoral discussion was too brief throughout Day 2. Participants voiced their concerns at the haste and lack of adequate input on any of the group recommendations and requested that a list from each group be compiled and sent to each member for comments prior to synthesis in the Working Group report. Detailed notes, recommendations, and comments for each breakout group are attached in Appendix D.

It is advised that the information presented in the *Group Information* subsection and Appendix D be considered in the context of the problematic areas and time constraints highlighted above. Despite this caution, this report contains the first and best attempt to date to capture

the opinions and recommendations from such a diverse and wide-ranging group of stakeholders and interested parties. The workshop heralds the first step towards gaining a broader consensus on a common goal and capitalizes on the synergy of participants' collective wisdom and commitment.

3.2 Group Information

As stated previously, three working groups were created based on vessel class:

Working Group 1—Large commercial vessels

Working Group 2—Commercial passenger and support vessels operating on a daily basis in near shore waters of Hawaii

Working Group 3—Private recreation vessels

The facilitator writes down the working group recommendations.

Each group was uniquely different as they approached their assigned tasks. Again, because of the manner in which data was collected on Day 2, information in this section will be described in broad strokes. (See Appendix E for Participant List of Breakout Groups)

Working Group 1

Process: The group compiled 19-20 recommendations during the first morning breakout session, then tacked on 3-4 additional recommendations after the second breakout session. Recommendations were subsequently grouped into 9 chapters or clusters. A problem statement was constructed for each chapter. Lastly, chapters were prioritized, and the group broke into smaller teams to arrive at detailed recommendations.

Although aligned by vessel category, the group displayed little consensus. Discussion was highly animated, but not contentious. Of all three breakout groups, this group was the most challenging in terms of facilitation.

Table 1. Working Group 1— Large commercial vessels
Priority, Problem Statement and Recommendations

Chapter	Problem Statement	Recommendations
Priority 1		
Whales	Define the vulnerabilities (e.g. collision, acoustic harassment) of relevant age/sex classes in different environments and seasonally (high traffic vs. low density and varying whale demographics) and how these threats change (i.e. magnitude) with increasing numbers of whales and vessels	• Research on demographics in different sub-habitats (Big Island, Maui County, Kauai, Oahu and Penguin Bank) including relative incidence of most vulnerable of population (e.g. calves) to be monitored over time (if not annually) for changes as population increases • Research on vessel density and type in each of the sub-habitats an indication of potential for collision or harassment (possible overlap with Chapter 3 Vessel Types and Activities). • Determination of acoustic environment and response of whales to vessels and vessel noise in each sub-habitat and age/sex class. • Necropsy of all dead whales
Research & Data Needs	Develop better reporting policies and archiving strategies of whale and vessel interactions and collisions in next six months, in order to better assess the whale/vessel collision issue, produce a risk analysis and decide on use of technological resources to mitigate any problems.	• Better reporting method including a centralized database • Risk assessment

Chapter	Problem Statement	Recommendations
Priority 2		
Geography	What are the boundaries of our areas of concern and are they manageable?	• Ship strike reduction measures and assessment will depend on geographic area (above comments). • Range wide Humpback Habitat (migratory destinations) • All sanctuaries (e.g. Monterey, Olympic Coast, Channel Islands and Stellwagen Bank) and other protected areas
Regulatory Issues/Management Action	Develop a proactive management approach for addressing vessel and whale interactions that take into account existing laws, regulations and socio-economic impacts.	Comments only. No detailed recommendations.

Table 1. Working Group 1 (continued)

Chapter	Problem Statement	Recommendations
Priority 3		
Future Work	What activities can be done in next 6 months by Sanctuary management to identify future work to minimize whale/vessel collisions?	Comments only. No detailed recommendations
Resource Allocation	In identifying and addressing the problem, decisions must be made by all interested entities (e.g. industry, Sanctuary staff, researchers) with regard to resource allocation. This includes developing priorities and identifying funding needs.	Comments only. No detailed recommendations
Education	Develop outreach and other educational materials in next six months on whale density, distribution, behavior, and vulnerability, as well as current regulations and safe boating policies, in order to inform and educate large vessel operators about the whales and their risks from vessel traffic.	Comments only. No detailed recommendations

Working Group 2

Process: The group brainstormed strategies to address the three questions provided during the first morning breakout session. Based on the responses the group consolidated areas of responses into general categories for presentation to the plenary and for further discussion in the afternoon. The group also recognized that they had some "common themes" or "assumptions that they wanted to pass on to the working group. The "assumptions" later evolved in the afternoon session.

At the second session prior to lunch the group broke into 3 smaller groups to develop specific recommendations for the 3 central questions developed from the morning session. Recommendations were developed to address areas of activities that are currently underway that could be enhanced or expanded, new activities that would prove useful moving forward, and finally a discussion on reporting. It was noted in that group that while the question involved "unintentional collisions", the group concluded that for those in this vessel category all collisions would be "unintentional". As such the issue was to consider the incident reporting and strategies to improve it. Lastly, the group refined their recommendations prioritized by criteria and ranked #1, 2, or 3 as a means of giving direction to the working group. The group established the following criteria to rank the recommendations:

Working group members discuss various recommendations to present to the whole group.

#1= very important and can be implemented within 6 months,
#2= very important and would take longer than 6 months,
#3= important, but can wait until other issues are addressed

The group itself appeared homogeneous among its participants. Discussions were more orderly than Working Group 1, and participants appeared to reach consensus on the majority of the recommendations. In general, commercial operators, public agencies and organizations consider that they are doing a very good job in managing "whessels" (a newly coined term to describe a whale/vessel interaction) in Hawaii, that the increase in whale population and relatively few collisions support that general feeling and focus should be placed where there are opportunities to improve existing efforts.

Table 2. Working Group 2— Commercial passenger and support vessels
Focus, Summary of Salient Points and Recommendations

Question	Summary of Salient Points	Recommendations
What is working well in Hawaii	• Education of operators, staff, crew about responsible interaction • Communication between agencies, operators, and organizations • Public Awareness (school- and passenger-based education and awareness) • Commercial Operators concerned about whale well-being and industry should self-regulate • Ocean Users Guide • Increase in whale population and a low ratio of collisions in more recent years.	1. Enhancing Existing Education Programs A. Workshops for local captains B. Share Strategies and Techniques for Driving Around Whales C. Train Naturalists D. Distribute to Whale Watching Vessels: Guides, brochures, posters, sticker 2. Develop an Industry-based Code of Conduct for use in Hawaiian waters 3. Research Needs 4. Predictability Model 5. Reporting A. Clarify Definitions: B. Increase reporting (without fear of penalty)
Things that would be helpful in the futures	• A predictability model which includes baseline data • More education and outreach on vulnerability of whales (calves, behaviors) • Research needs: • Education needs: • Other solutions: • Opportunities to work collaboratively with other jurisdictions.	6. 100 yard Rule A. Need to develop a better, more clear definition of "Approach", current language is vague—see Alaska for approach language B. Consider issue of "intent to takes" into consideration efforts of operators to be good stewards C. Look at language/idea of "Prudent Seamanship" in amending language 7. Communication A. Continue building communication efforts and activities between operators and agencies and organizations
Unintentional collisions and reporting	• Need for common definition on incidental contact, collisions, & transiting vs. approaching • Definitions will clarify reporting, improve trust, and give better data • 100 yd rule • Enforcement:	8. Speed A. Look at speed issues by vessel type B. Look at implementing the speed campaign "15 or less is best, 20 is plenty" C. Consider data on speed of 13 or less 9. Public Awareness/Outreach A. Recreational Boaters—during registration provide Code of Ethics/Conduct, must sign and get sticker B. Continue school programs C. Continue passenger awareness D. Distance efficacy—discuss ways of addressing distance shore to boat, shore to whale, boat to whale

Working Group 3

Group 3 also brainstormed strategies to address the three questions provided during the first morning breakout session. Once these questions had been discussed and responses captured, the group focused on determining common themes that could be identified and began binning the responses within those themes. Overall, the discussion of the group focused largely on the need for improving education and outreach to recreational vessel operators and commercial operations that support and service these users. The group further refined their recommendations and agreed on priority actions described below:

1. Collect and analyze available data and information to clarify the scope and magnitude of the threat, if one exists, of collisions between recreational vessels and whales. If insufficient data exists, develop and implement a research program to answer this question.

2. Continue to (a) develop lower-cost education and outreach initiatives, as described above, and (b) enhance partnerships to share resources for recreational vessel outreach and education-related initiatives until agreement regarding the scope and magnitude of threat has been reached. The group noted that future actions can be more appropriately guided by a better understanding of the scope and magnitude of the threats.

Working group participants prioritize the recommendations,

Generally, the group seemed very orderly and reached clear consensus on targeted education and outreach to recreational vessel operators. Recreational vehicle operators pose less of a threat to whales than vice versa, although documentation does exist that problems have occurred on the East Coast.

Table 3. Working Group 3— Private recreation vessels
Priorities and Recommendations

PRIORITIES	RECOMMENDATIONS
1) Collect and analyze available data and information to clarify the scope and magnitude of the threat, if one exists, of collisions between recreational vessels and whales. If insufficient data exists, develop and implement a research program to answer this question. 2) Continue to (a) develop lower-cost education and outreach initiatives, as described above, and (b) enhance partnerships to share resources for recreational vessel outreach and education-related initiatives until agreement regarding the scope and magnitude of threat has been reached, Future actions can be more appropriately guided by a better understanding of the scope and magnitude of the threats.	Outreach products: • Should be developed to supplement the "Handbook" that are more "on the water" friendly…placards, informational stickers, and similar documents focused on providing succinct, understandable information about "wessels"… • All documents produced should be translated and available in multiple languages. • Examine similar initiatives in other sanctuaries to seek out models for types of documents to be developed. • Some measure of effectiveness of outreach tools should be designed and implemented…must be sure they are transmitting the information effectively. Targeted Marketing Strategy: • Key target audiences – local boat operators, visitors and newcomers, small boat fishermen, "paddlers" (canoe, kayak, etc.) and commercial operators who rent vessels • Focused on getting the right information to the right folks… • Some random ideas for consideration: • Measurement of effectiveness of marketing strategy also important. Reporting: • Need to get the recreational boater involved in reporting incidents observed on the water • "800" (NMFS or other) number or some other vehicle should be used to collect information • Need to work with partners to get handle on collection and management of vessel collision data and information • Must find a way to get information back to those who submit to show that the information is not going into a "black hole" • Another candidate for exploring industry partnerships…sponsorships, incentives, etc.) Research: • Development of low-tech, low-cost "technology" and vessel operation protocols to reduce probability of collisions between whales and recreational vessels. • Get a better handle on the threat posed to whales from collisions with recreational vessels.

4. Conclusion

Discussions and presentations during the workshop generally suggest that vessel collisions with whales is an issue to be aware of in Hawaiian waters, but it is not a critical problem at the present time. However, participants strongly support efforts to monitor the various parameters to improve management of the issue, including conducting assessments of whale population growth, whale behavior trends and increased ship traffic in waters surrounding the Hawaiian Islands. Improving data collection and storage of information on the occurrence of vessel strikes and "near misses" with whales was also widely supported. In addition, the participants were also strongly in favor of increased education and outreach efforts as an important management tool to decreasing the incidence of whale vessel collisions.

Participants take advantage of the breaks to share information.