February 5, 2003

Aloha!

On behalf of the organizers of the Second International Fishers Forum (IFF2), I would like to thank all of the people involved in making IFF2 such a resounding success. A special mahalo goes to the Forum sponsors—in particular, the Hawaii Longline Association, the National Marine Fisheries Service, the North Pacific Fishery Management Council and the Western Pacific Regional Fishery Management Council.

IFF2 built on the successes and maintained the momentum established at the First International Fishers Forum (IFF1), held in New Zealand in 2000. This second Forum brought together a greater diversity of fishery participants from around the world and focused not only on seabird longline bycatch but also incidental catches of sea turtles in pelagic longline fisheries. Altogether, a total of 236 participants from 28 different countries discussed these issues and exchanged perspectives and solutions during the plenary and breakout sessions.

The state of fisheries around the world and their impacts on marine ecosystems are attracting greater scrutiny and attention from governments, conservation organizations and the public at large. Many seabird and sea turtle populations have been severely reduced by a variety of man-made or anthropogenic sources, fisheries among them. As with many problems, the solutions will be found within the matrix of the problem itself, and, in the case of fishery bycatch, it is fishermen who can lead the way in finding the answers. IFF2 was successful in increasing the awareness of longline fishermen about the seriousness of seabird and sea turtle bycatch and fostering a sense of urgency that fishermen must take a leadership role in tackling these problems.

The comprehensive proceedings of the forum are being compiled and edited for publication. In the interim, this synopsis of IFF2 provides a timely summary of the principal conclusions of the meeting sessions, which were integrated into the final resolution from IFF2. We hope that between now and the next forum that IFF2 participants will continue to work on the commitments they made at this meeting and, in particular, securing greater participation by the major longline fishing nations at the Third International Fishers Forum. We look forward to seeing you there.

Mahalo,

Kitty M. Simonds
Executive Director
Press conference: (l-r) Janice Molloy, John Cooper, Douglas Hykle, Colin Limpus, Kitty Simonds, Satya Nandan and Jim Cook.
Executive Summary

Longline fisheries accidentally hook and kill seabirds, such as albatross, by the tens of thousands each year. Finding the solution to this problem is a priority for regional, national and international governments and organizations.

Likewise, sea turtle populations throughout the world have declined greatly over the last century. Some populations have been driven to near extinction. The primary causes of this decline are the direct harvest of nesting females and their eggs; the destruction of nesting and foraging habitat; marine pollution; and the incidental capture of sea turtles in various types of fishing gear, including longline gear.

While work to develop solutions to reduce the bycatch of sea turtles and seabirds by longline gear has begun, fishermen, managers and scientists recognize that these efforts must be enhanced and collaboration must be pursued internationally as these species are highly migratory, inhabiting the waters of many nations during their life cycle.

To further this cause, the Western Pacific Fishery Regional Fishery Management Council hosted the Second International Fishers Forum (IFF2), Nov. 19–22, 2002, in Honolulu.

IFF2 built on the First International Fishers Forum (IFF1) held in Auckland, Nov. 6–1, 2000, organized by the New Zealand Government’s Department of Conservation and Ministry of Fisheries, in association with the New Zealand Seafood Industry Council. Many of the world’s leading longline fishing fleets were represented at IFF1 to exchange information and develop practical measures to minimize the incidental capture of seabirds in longline fishing operations. Participants agreed that the incidental capture of albatrosses and petrels in longline fisheries was a serious problem that has had significant impacts on the populations of some species over the past 20 years. They recognized the need for ongoing research and development and acknowledged that progress would be determined by their own contributions within their own fishing entities, regions and organizations. In this way each entity, region and organization was to set its own objectives based on its particular expertise and economy.

IFF2 widened the focus of IFF1 to address the bycatch of sea turtles as well as seabirds by longline fishing gear. IFF2 had the following objectives:

- To increase the awareness of fishermen to the incidental longline catch of seabirds and sea turtles that may pose a serious problem to these populations and to the continued operations of longline fishing.
- To promote the development and use of practical and effective seabird and sea turtle management and mitigation measures by longline fishermen.
- To foster an exchange and dissemination of information among fishermen, scientists, resource managers and other interested parties on the use of mitigation measures and the development of coordinated approaches to testing new measures.
- To promote the development and implementation of collaborative mitigation research studies by scientists, fishermen, resource managers and other interested parties.
- To build on IFF1, encouraging continued progress and new participants.

More than two hundred representatives from fishing industries, government agencies, non-governmental organizations and other interested parties from 28 countries in the Atlantic, East and Central Pacific, North Pacific and South Pacific participated in IFF2.

Ambassador Satya N. Nandan, Secretary-General of the International Seabed Authority, delivered the opening remarks, setting ambitious goals for the Forum participants: “The longline fishing industry has been proactive in developing mitigation measures for seabird interactions, for example, tori poles, blue dyed bait, and setting chutes are all ideas that stem from longline fishermen, and were developed with the cooperation of the longline industry,” he noted.
“The same inventiveness now needs to be applied to the problem of reducing longline-turtle interactions. ...By taking a proactive role in the development of turtle mitigation technology and strategies longline fishermen will provide an effective rebuttal to more draconian solutions which have been proposed such as outright longline bans or severe constraints on longline fisheries.”

Assisted by professional facilitators, the participants engaged in four days of plenary and breakout sessions focused on eight themes. Some of the sessions included “fishermen only” groups, while others were open to all.

The Seabird Mitigation and Research Session participants generally agreed that existing mitigation practices have positive impacts and the need is not for new technologies but for fine-tuning and broadening the use of existing technologies. They also agreed that improved mitigation results would likely come from better crew training, expanded testing in different regions, new vessel construction and the development of minimum standards. Participants strongly believed that no single mitigation technology was likely to serve as a “silver bullet.” Instead, the best results would likely come from developing a “toolbox” consisting of suites or combinations of measures. Ultimately, these solutions would need to be incorporated into the design of new vessels.

The Sea Turtle Mitigation and Research Session participants agreed that the major challenges standing in the way of finding a means to reduce sea turtle–longline bycatch include data needs on the biology of target species and bycatch, effective gear modifications and fishing tactics, research facilitation and dissemination, and industry/public awareness and incentives for action.

The Data Collection Session participants focused on the overarching issues of insufficient data and enduring mistrust between fishermen, on the one hand, and those who collect and use the data, on the other hand. Most participants generally felt that there was ample room for improvement. Several cautioned that it might take some time to overcome the lack of trust that exists between the fishing industry and those responsible for monitoring and regulating it.

The Education/Communication Session participants said that fishermen need broad information on seabirds and marine turtles, such as vulnerability of populations, population trends, how to avoid catching them and how to release them. They said species profiles of marine turtles and seabirds would be useful to fishers, observers and schools and are worth reproducing. They suggested waterproof plastic books or folders, ring binders, or waterproof pocket flipbooks as the reproduction format and translations in Spanish, Portuguese, Mandarin, Japanese and English.

The Obstacles, Lessons Learnt and the Way Forward Session participants suggested improving international technical coordination among fishermen, gear manufacturers, biologists and others to produce new enhanced mitigation measures; closing the gap between fishermen and other concerned parties to enable them to work together more effectively and to build coalitions to realize commonly held goals; and better informing fishermen and consumers about the need for reducing incidental seabird and sea turtle bycatch in longline fisheries and of the progress that has been made by some fishermen and fisheries.

The International Agreements/National Approaches Session participants recommended the creation of an International Plan of Action (IPOA) on sea turtles, incorporating sea turtles into existing IPOAs and making international agreements less generalized and more specific. They noted that new ideas on mitigating turtle interactions have to be sold to the fishing industry, and good science is essential to accomplish this. They said fishing gear should include identification marks for the source fishery, as specified in the FAO Code of Conduct. The group agreed that the remote monitoring of fishing fleets by vessel monitoring systems is only really effective for time–area closures. They said feedback on
research should be a professional courtesy and agreed that a mechanism is needed to assess the socio-economic impacts of measures implemented under international agreements. The group also proposed a list of items to be added to international agreements to improve their efficacy.

The Modeling Session participants participated in hands-on exercises using deterministic (where there is no randomness) and stochastic (where chance plays an essential part in the calculations) models. The industry people found models to be more complex than they had anticipated, but they expressed interest in using them in economic or business type applications. Some managers said the session helped them communicate with modelers or people who used models. The researchers were pleasantly surprised to discover what could be done with simple models, e.g., to convey data needs to those who collect the data.

The Fishermen Incentives Session identified effective incentive instruments to minimize the bycatch of seabirds and sea turtles in each represented longline fishery. Participants most commonly expressed an interest in instituting bycatch fee and exemption structures, industry self-policing and eco-labeling.

On the final day, several speakers provided participants with thoughts of encouragement and insightfulness as they prepared to write the Forum’s outcomes.

In recounting US efforts to reduce incidental bycatch of sea turtles and seabirds, William T. Hogarth, NOAA Assistant Administrator for Fisheries, said: “One pattern certainly has emerged in these efforts to promote the development and use of practical and effective seabird and sea turtle management measures by longline fishermen: collaboration and an international focus yields the best results.”

In a video address, US Sen. Daniel K. Inouye urged participants to “work especially hard to develop the international cooperation necessary for effective management. ...One country alone cannot stem the jeopardy to the world’s ocean resources; the effort must be international in scope.” He proposed a multi-pronged approach that included continuing the collaborative efforts amongst industry experts, scientists and managers started at IFF1 and encouraging governments to support cooperative rather than unilateral approaches, efforts to protect sea turtle nesting grounds and mitigation of the effects of marine debris.

With the thoughts of these and other speakers as background, the participants drafted a Forum Resolution, which contains four action items:

- To request that the Western Pacific Regional Fishery Management Council present the findings of the Forum at the next Session of the Committee of Fisheries of the Food and Agriculture Organization.
- To encourage the FAO to organize an expert consultation with relevant international organizations to develop Guidelines leading to an International Plan of Action for the Reduction of Sea Turtle Bycatch from Marine Fisheries throughout the world’s oceans.
- To invite the Convention on Migratory Species to consider how best to reflect the findings of IFF2 in the further development of existing and planned instruments for the purpose of conserving marine turtles and seabirds on a global scale.
- To encourage the FAO, relevant regional fisheries management organizations and national agencies to collaborate in the implementation and monitoring of the International Plan of Action to reduce incidental catches of seabirds in longline fisheries.

Another concrete outcome of IFF2 was the 65 commitments made by individual participants to a variety of projects to protect sea turtles and seabirds. They included the following actions:

- Share mitigation technologies with different fisheries in different nations.
- Commit to use and test more mitigation strategies and to encourage the same within particular fleets, fisheries and nations.
- Form a multi-stakeholder advisory committee to address mitigation, data collection and research needs within particular fisheries.
• Increase the involvement of fishermen in the development of new mitigation technologies;
• Secure the participation of more longline fishing nations and fishermen in reducing incidental bycatch of seabirds and sea turtles.
• Create public awareness campaigns regarding the issues being faced and the progress made to date.
• Improve communications between the different stakeholder communities.
• Improve logbooks and other data collection techniques.
• Conduct new research studies (e.g., turtle survivability and mitigation, line weighting studies).
• Develop databases and websites to improve information organization and dissemination and to provide educational materials to all necessary audiences.
• Improve communication and collaboration among agencies around the world that have drafted FAO National Plans of Action for seabirds and mentor other countries that have not yet done so.
• Increase the presence of NGO members on fishing boats.
• Organize further conferences on the topic.

Upon conclusion of IFF2, participants were asked a series of four exit questions. These questions assessed the success of the forum and provided a means to voice concerns or provide recommendations for future meetings. Based on the results of this questionnaire as well as the questionnaire completed during the IFF2 registration period, the following participant observations and recommendations were gleaned:

IFF2 provided participants with education, collaboration and networking opportunities as well as a better understanding and appreciation of regional and international bycatch issues. Participants gained motivation to continue working towards development of bycatch solutions and seemed eager to take home information or institute mitigation methods acquired at the Forum. Overall, this was seen as a positive and successful meeting on many levels, yet it was also widely recognized that work remains to address global awareness and implementation of mitigation measures.

The Forum concluded that there is a need to bring together all the nations that participate in longline fisheries to search for inclusive solutions that allows the fishers, seabirds and sea turtles to survive. The apparent lack of international participation from some major fishing countries, particularly those with distant-water fishing fleets, is a concern. Future organizers should focus on integrating these countries in the Forum process.

Participants also suggested that future Forum breakout sessions be restructured to promote and ensure integration of all stakeholders to facilitate the exchange of ideas, break down cultural barriers between scientists and fishers, and promote transparency. It would have been beneficial for participants to know each other's stakeholder status (fishermen, industry support, academia, research, government, NGO, etc.) and the region/area of the fishermen’s operations.

Most important, perhaps, IFF2 concluded that the very active engagement of the fishers was a necessary component for a successful program. They recognized that most of the solutions to bycatch programs have originated with the fishers, so there is a need to develop mechanisms to encourage and channel the creativity of the fishermen.

With the progress and lessons learned from IFF1 and IFF2, the Third International Fishers Forum (IFF3) is bound to bring us closer toward finding and implementing solutions to reach our mutual goal of sustaining food fish harvests while protecting endangered and threatened species. We look forward to seeing you there!
Second International Fishers Forum Resolution

Whereas, representatives from fishing industries, government agencies, non-governmental organizations and other interested parties from over 28 countries participated in the Second International Fishers Forum held in Honolulu, Hawaii, for the purpose of addressing possible solutions to mitigate the incidental bycatch of sea turtles and seabirds by longline fishing gear;

Whereas, the participants deliberated on a wide range of issues, including: 1) Seabird and Sea Turtle Mitigation and Research; 2) Data Collection; 3) Education and Communication; 4) Obstacles, Lessons Learnt and the Way Forward; 5) International Agreements and National Approaches; 6) Fishermen Incentives and; 7) Seabird and Sea Turtle Population Modeling;

Noting with satisfaction, the proposed United Nations General Assembly resolution on large scale drift-net fishing, unauthorized fishing in zones of national jurisdiction and on the high seas/illegal, unreported and unregulated fishing, fisheries bycatch and discards and other developments;

Recognizing the need for population assessments, monitoring programs and increased awareness about all factors contributing to the mortality of sea turtle and seabird populations globally;

Aware of the relevance to sea turtle conservation of the Inter-American Convention for the Protection and Conservation of Sea Turtles, and of instruments developed under the Convention on Migratory Species (CMS) for sea turtles of the Atlantic Coast of Africa and of the Indian Ocean and South-East Asia;

Aware that International Plans of Action are currently in place to reduce incidental catches of seabirds in longline fisheries, and for the conservation and management of sharks;

Aware also of initiatives by various regional fisheries management organizations to collect data on the incidental catch of seabirds, and to institute appropriate data collection and mitigation procedures;

The participants of the IFF2 hereby resolve to:

Request that the Western Pacific Regional Fishery Management Council present the findings of this Forum at the next Session of the Committee of Fisheries of the Food and Agriculture Organization.

Encourage the Food and Agriculture Organization (FAO) to organize an expert consultation with relevant international organizations to develop Guidelines leading to an International Plan of Action for the Reduction of Sea Turtle Bycatch from Marine Fisheries throughout the world’s oceans;

Invite the Convention on Migratory Species to consider how best to reflect the findings of this Forum in the further development of existing and planned instruments for the purpose of conserving marine turtles and seabirds on a global scale;

Further Encourage the FAO, relevant regional fisheries management organizations and national agencies to collaborate in the implementation and monitoring of the International Plan of Action to reduce incidental catches of seabirds in longline fisheries.
Program

DAY ONE  November 19, 2002

7:00 AM  Registration/Continental Breakfast
           Hosted by Rena International

8:00 AM  Welcoming Ceremony and Prayer:
           Kitty Simonds, Executive Director, Western Pacific
           Regional Fishery Management Council

8:30 AM  Opening Address: Ambassador Satya Nandan,
           Secretary-General, International Seabed Authority

9:00 AM  Overview of Forum Structure, Goals, Social Events
           and Breakout Session Objectives: Forum Convener

9:15 AM  Group Photo and Coffee/Tea Break

9:30 AM  IFF1 Commitment Update:
           Janice Molloy, NZ Department of Conservation

10:45 AM Coffee/Tea Break

11:00 AM Seabird and Sea Turtle Biology, Distribution
         and Population Status Overview: Rosemary Gales,
         Tasmanian Parks and Wildlife Service, and Colin Limpus,
         Queensland Parks and Wildlife Department

12:00 PM Lunch Hosted by the Marine Conservation Action Fund

1:00 PM  Longline Fisheries and Data Collection Overview: Tim Park,
         Secretariat of the Pacific; Mike Bayle, Alaska Frontier Company;
         and Howard McElderry, Archipelago Marine Research Ltd.

2:30 PM  Coffee/Tea Break

2:40 PM  Mitigation Measures, Data Collection and Research
         Overview: Nigel Brothers, Tasmanian Parks and Wildlife
         Service, and Christofer Boggs, NMFS Honolulu Laboratory

3:40 PM  Coffee/Tea Break

3:50 PM  Modeling Overview: Anthony Starfield, University of Minnesota

4:20 PM  International Agreements/National Approaches
         Overview: John Cooper, University of Cape Town, and Douglas
         Hykle, Convention on the Conservation of Migratory Species

5:30 PM  E Komo Mai (Welcoming) Celebration
### DAY TWO  November 20, 2002

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<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>5:30 AM</td>
<td>Shuttle Service to the United Fishing Agency Auction</td>
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<tr>
<td>7:00 AM</td>
<td>Continental Breakfast Hosted by Seafreeze, Ltd.</td>
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<tr>
<td>8:00 AM</td>
<td>Breakout Sessions</td>
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<td>• Seabird Mitigation and Research</td>
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<td>• Sea Turtle Mitigation and Research</td>
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<td>• Data Collection</td>
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<td>• Education/Communication</td>
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<td>9:30 AM</td>
<td>Coffee/Tea Break</td>
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<td>11:00 AM</td>
<td>Lunch</td>
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<td>12:00 PM</td>
<td>Breakout Sessions continued</td>
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<tr>
<td>2:30 PM</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>3:00 PM</td>
<td>Breakout Sessions continued</td>
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<tr>
<td>6:30 PM</td>
<td>Hawaii Longline Association Tour of Longline Vessels, Gordon Biersch Brewery &amp; Restaurant, Aloha Tower</td>
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### DAY THREE  November 21, 2002

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<th>Time</th>
<th>Event</th>
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<tr>
<td>5:30 AM</td>
<td>Shuttle Service to the United Fishing Agency Auction</td>
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<tr>
<td>7:00 AM</td>
<td>Continental Breakfast Hosted by New Zealand Department of Conservation</td>
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<tr>
<td>8:00 AM</td>
<td>Report on the Day 1 Breakout Sessions and Summary of Comment Box Responses from Day 1: Forum Convener</td>
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<tr>
<td>8:30 AM</td>
<td>Coffee/Tea Break</td>
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<td>8:45 AM</td>
<td>Breakout Sessions</td>
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<td>• Obstacles, Lessons Learnt and the Way Forward</td>
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<td>• International Agreements/National Approaches</td>
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<td>• Modeling</td>
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<td>• Fishermen Incentives</td>
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<td>10:00 AM</td>
<td>Coffee/Tea Break</td>
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<td>11:45 AM</td>
<td>Lunch</td>
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<tr>
<td>1:00 PM</td>
<td>Breakout Sessions continued</td>
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<tr>
<td>2:30 PM</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>6:00 PM</td>
<td>Luau at Waikiki Aquarium</td>
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<td>Time</td>
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<tr>
<td>5:30 AM</td>
<td>Shuttle Service to the United Fishing Agency Auction</td>
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<tr>
<td>7:00 AM</td>
<td>Continental Breakfast Hosted by North Pacific Longline Association</td>
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<tr>
<td>8:30 AM</td>
<td>Report from Day 2 Breakout Sessions</td>
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<tr>
<td>9:00 AM</td>
<td>NOAA’S Current Initiatives to Reduce Seabird and Sea Turtle Bycatch: William T. Hogarth, Assistant Administrator for Fisheries, NOAA</td>
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<tr>
<td>9:30 AM</td>
<td>Strategy to Mitigate Tuna-Dolphin Bycatch: Martin Hall, Inter-American Tropical Tuna Commission</td>
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<td>10:00 AM</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>11:00 AM</td>
<td>Begin Developing Written Outcomes for IFF2</td>
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<tr>
<td>12:00 PM</td>
<td>Lunch Hosted by Hawaii Longline Association</td>
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<td>Remarks from US Senator Daniel K. Inouye via Videotape</td>
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<tr>
<td>2:00 PM</td>
<td>Finish Developing Written Outcomes of IFF2</td>
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<tr>
<td>3:00 PM</td>
<td>Coffee/Tea Break</td>
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<tr>
<td>4:30 PM</td>
<td>Closing Statement: Sean Martin, President, Pacific Ocean Producers Native Hawaiian Closing Ceremony</td>
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Breakout Session Summaries

Seabird Mitigation and Research

Main Objectives: Identify and discuss the best existing seabird mitigation practices and research needed to evaluate new and existing mitigation measures for pelagic, demersal and Spanish demersal longline systems.

Session Leader: Ed Melvin, Washington Sea Grant Program

Participants: Approx. 30-40 per session

Presentations:
- Line Weighting: Bruce King, Gourock
- Underwater Chutes: Dave Kreutz, Australia fisherman
- Blue-Dyed Bait: Hiroshi Minami, National Research Institute of the Far Seas Fisheries, Japan
- Spanish System Best Practices: Ben Sullivan, Falklands Conservation
- Boom and Bridle Scaring Lines: John Bennett, Sanford Ltd.

Attention was focused on specific mitigation strategies for each gear type. As setting chutes and integrated line weighting are currently in the research and development phase, the focus on them was on their potential. All of the main mitigation strategies were considered to be effective in diminishing the bycatch of seabirds. Each strategy was also found to have its own strengths, weaknesses and need for further research.

Streamer Lines:
(Special attention was given to the jiggler line developed by John Bennett.)

Strengths: Applicability to all gear types, low cost, low impact on target catch and safety.

Weaknesses: Deployment difficulties for smaller boats, high effort to retrieve the lines, entanglement problems, and poor compliance.

Research Needs: Test the effects of two lines versus one line in reducing seabird strikes and explore the creation of standards for streamer line materials, operations and performance.

Integrated Line Weighting:

Strengths: Good applicability to both demersal and pelagic gear types, safety, ease of integration into crew activities and ease of use.

Weaknesses: High cost and limited availability.

Research Needs: Durability and wear of weighted lines and the effects of integrated line weighting on target and bycatch rates.

Setting Chute:

Strengths: Ease of use, minimal adverse effect on target catch, ease of integration into fishing operations, and easy compliance.

Weaknesses: High cost, limited availability, questionable durability, limited application for smaller boats and maintenance concerns.

Research Needs: Test their reliability and their performance in other regions and explore potential design modifications (e.g., different chute gradients, use of gimbals and flexes, double chutes).
Stealth Gear/Bait:
(Focus was on blue-dyed bait.)

Strengths: Good applicability to all gear types, relatively low cost and ease of use.

Weaknesses: Poor availability, messiness on-board, lack of color standards and potential safety issues associated with dye toxicity.

Research Needs: Determine which bait colors and dyeing techniques has optimal impacts on target and bycatch rates.

Offal Management/Retention:
Strengths: Reduces the attractiveness of fishing vessels to seabirds.

Weaknesses: Additional space and labor required to store and manage offal.

Research Needs: New types of reducers or extractors for offal and additional products from offal.

Night Setting:
Strengths: Low cost, enforceability and effectiveness with regard to surface feeding birds.

Weaknesses: Potential negative impacts on target catch, exposing fish to sand fleas and increasing seabird bycatch for certain species (e.g., northern fulmar).

Research Needs: Effects of night setting on particular species and effects of reduced deck lighting.

Participants generally agreed that existing mitigation practices have positive impacts and the need is not for new technologies but for fine-tuning and broadening the use of existing technologies. They also agreed that improved mitigation results would likely come from better crew training, expanded testing in different regions, new vessel construction and the development of minimum standards. Participants strongly believed that no single mitigation technology was likely to serve as a “silver bullet.” Instead, the best results would likely come from developing a “toolbox” consisting of suites or combinations of measures. Ultimately, these solutions would need to be incorporated into the design of new vessels.

Sea Turtle Mitigation and Research

Main Objectives: Review progress in finding viable means of reducing sea turtle–longline bycatch, identify challenges and brainstorm solutions.

Session Leader: Christofer Boggs, NOAA Fisheries, Honolulu Laboratory

Participants: Approx. 30 participants per session

Presentations:
- Fishing Experiments in the Azores: Alan Bolten, Archie Carr Center for Sea Turtle Research, Department of Zoology, University of Florida
- Atlantic NED Fishing Experiments: John Watson, US NOAA Fisheries, Mississippi Laboratory
- Pacific Fishing Experiments: Christofer Boggs, NOAA Fisheries, Honolulu Laboratory

There was general agreement on the major challenges standing in the way of finding effective means of reducing sea turtle–longline bycatch. The following suggestions were offered for overcoming these challenges:

Baseline on the Biology of Target Species and Bycatch Data Needs:
- General information on species composition, size distribution and stock
composition as well as information on the distribution patterns of both bycatch and target species (including data on age, size, and seasonal, annual, vertical diurnal and climate-related variations).

- Studies on turtle diet and factors that attract turtles to gear.
- Larger sample sizes, greater employment of telemetry and increased use of control animals.
- Increased levels of research collaboration between scientists, the fishing industry and non-government organizations.

**Effective Gear Modifications and Fishing Tactics:**

- Increased financial support for additional mitigation research on bait types (e.g., mackerel), size and baiting techniques; hook type, size, and geometry; and float design to make longline gear more “stealthy.”
- More research using sensors and hook timers to determine when turtles and target species are encountered and increased study of tuna directed fishing.
- Provide fishers with real-time information and possibly real-time closures with vessel monitoring system communications to help avoid turtle interactions.
- Area closures and effort reduction when appropriate.

**Research Facilitation and Dissemination:**

- An international plan of action for sea turtles to encourage greater levels of international action and coordination.
- An international technical working group responsible for facilitating, coordinating and standardizing research and for disseminating results in a timely fashion.
- Legislation crafted and promoted by stakeholders that would help fast track and centralize future mitigation research.

**Industry/Public Awareness and Incentives for Action:**

- Increase international participation by developing consumer awareness and education programs as well as marketing tools (e.g., eco-labeling) to help use the market as a driving force.
- Limit penalties associated with sharing data and give countries with developing longline fisheries access to the “right” gear or “right” gear information.
- Translate hard data on the impacts of the longline fishery to help convince the industry of the fishery’s threat to turtle populations.

Participants also discussed the need to better contextualize the issue of sea turtle mortality (including an examination of post-hooking survival). They noted the need to compare sea turtle mortality associated with the longline fishery to those arising from other sources in order to develop an overall picture of the causes of sea turtle mortality. Fishermen, in
particular, were concerned that these other sources were being overlooked.

Data Collection

**Main Objectives:** Define current information needs for different fisheries to examine how well existing data collection programs have been meeting needs, investigate available technological opportunities and explore building stronger ties between fishery participants and users of the data.

**Session Leader:** Howard McElderry, Archipelago Marine Research Ltd.

**Participants:** Approx. 20 per session

**Presentations:**
- Status of Micronesian Data Collection Programs: Tim Park, Micronesian Fishing Authority
- Australian Data Collection Programs: Bruce Wallner, Australian Fisheries Management Authority

Discussions focused on identifying the problems impeding adequate data collection through logbooks, observer programs and electronic monitoring systems and exploring potential ways of overcoming these problems. The following key problem areas were identified:

**Unclear Objectives:**
Data collection programs suffer from either a lack of clear goals or overlapping or conflicting goals, which leads to resistance or lack of engagement in data collection activities.

**Lack of Trust:**
Designers of data collection programs and subsequent users of the resulting data, on one hand, and fishermen who assist in the collection of data, on the other, do not trust one another. Fishers fear that the data produced might turn out to be self-incriminating. This makes them reluctant to assist in data collection efforts.

**Insufficient Data on Bycatch:**
Data collected via logbooks or observer programs is uneven, with data on bycatch often lacking when compared to data on target catch. Reliability of logbook data is a concern.

**Poor Data Sharing:**
Collected data is not often shared in an effective or equitable manner. Fishermen seldom see the results of research conducted on their boats or within their fisheries.

**Data Use Issues:**
Governmental agencies, the research community and environmental groups generally favored broader and more rapid dissemination of data. The fishing industry wants more involvement in decisions over how data is used.

**Lack of Commitment:**
Inadequate funding and a general lack of political will are major impediments to improving data collection programs.

**Illegal, Unregulated and Unreported Fishing:**
While significant efforts have been made to improve the quantity and quality of data being collected within particular fisheries, the completeness and overall reliability of this data will continue to be questioned so long as illegal, unregulated and unreported fishing remains a serious problem.

Participants came up with a wide variety of creative suggestions to overcome the identified hurdles. Many of these were directed to the overarching issues of insufficient data and enduring mistrust.

- Devise minimum standards for establishing data collection and sharing at the international level.
- Improve the training available for both skippers and on-board observers. Develop a certification system.
• Mix different data collection methods and technologies as appropriate to provide greater coverage and quality of data than any single method could achieve alone.

• Ensure that the data to be collected responds clearly to well-defined resource management needs. Build flexibility into data collection systems so that they do not become entrenched and unresponsive.

• Identify the possible factors affecting bycatch and include records for these factors in the data collection process.

• Identify the risks arising from making extrapolations based on a small amount of data and from only a section of the fishing area.

• Involve the fishing industry to a greater extent in the design of data collection programs, in decisions regarding how the data will be used and in generating funding to support the data collection programs.

• Ensure that the results of and benefits emerging from data collection programs are directed back toward the fishermen who helped to generate the data.

• Institute a greater degree of transparency with regard to the objectives of particular research programs and the intended uses of the data collected.

• Employ the assistance of neutral third parties to work with both governments and the fishing industry to collect data.

Most participants generally felt that there was ample room for improvement. Several cautioned that it might take some time to overcome the lack of trust that exists between the fishing industry and those responsible for monitoring and regulating it.

Education/Communication

Main Objective: View and discuss exhibits by different agencies and presenters.

Session Leader: Sandy Bartle, Te Papa Tongarewa

Participants: Walk-through session open throughout the day

Exhibits:

• Seabird Identification—Skins: Sandy Bartle, Te Papa Tongarewa
• Seabird Identification—Illustrations: Derek Onley, Blueskin Stone
• Seabird Species Profiles: Derek Onley, Blueskin Stone
• Video Viewing Area: Cindy Knapman, Western Pacific Regional Fishery Management Council
• Seabird Handling: Katie Swift, US Fish and Wildlife Service
• Sea Turtle Flipper Tagging: Shandell Eames, NOAA Fisheries Honolulu Laboratory
• Genetic Sampling: Peter Dutton, NOAA Fisheries
• Seabird Distribution: David Hyrenbach, Duke University Marine Lab
• Sea Turtle Distribution: Yonat Swimmer, NOAA Fisheries
• Sensory Physiology: Yonat Swimmer, NOAA Fisheries
• Modeling Display: Milani Chaloupka, Ecological Modelling Consultancy, and Jean-Claude Stahl, Museum of New Zealand Te Papa Tongarewa
• Sea Turtle Shells and Handling: Thierry Work and Randall Arauz, Sea Turtle Restoration Project
• Protected Species DVD/CD-Rom Interactive Project: Eric Sandberg, NOAA Fisheries
• Fishermen Workshops: Karla Gore, NOAA Fisheries

Participants said that fishermen need the following information on seabirds and marine turtles: broad information on species, such as vulnerability of populations, population trends, how to avoid catching them and how to release them. Other useful information would be species identification, information about threatened or endangered status, up-to-date population data, threats to the species, mitigation and handling techniques.

Participants felt the seabird and sea turtle identification guides were the most helpful educational products on exhibit. Others enjoyed the videos and seabird tracking information the most.
Participants said species profiles of marine turtles and seabirds would be useful to fishers, observers and schools and are worth reproducing. They suggested the reproduction format should be waterproof plastic books or folders, ring binders, or waterproof pocket flipbook. Translations should be made in Spanish, Portuguese, Mandarin, Japanese and English.

Obstacles, Lessons Learnt and Ways Forward

Main Objective: Build on the experiences gained from IFF1, as presented on Day 1, and on some of the obstacles and solutions identified in the breakout sessions on Day 2 for the purpose of moving toward a discussion of concrete actions on Day 4.

Session Leaders: Jim Cook, Pacific Ocean Producers ('fishermen only' sessions); Janice Molloy, New Zealand Department of Conservation; and Carlos Moreno, Instituto de Ecologia y Evolucion, Universidad Austral de Chile (open sessions)

Participants: Approx. 20–30 per session

Presentations: Three broad questions were used to guide the discussion:

• What obstacles are preventing us from solving seabird and sea turtle bycatch?

• What ways of overcoming these obstacles can we learn from each other?

• And how can each of us contribute to solving seabird and sea turtle bycatch?

Multiple sub-sessions ran concurrently. The agendas for all of the sub-sessions were identical. Two sessions were designated as “fishermen only” to encourage greater freedom of expression and joint brainstorming among members of the fishing community. Participants agreed to keep the sessions “confidential” in order to encourage creative, out-of-the-box thinking.

Participants formed into sub-groups focused on pelagic/seabirds, pelagic/sea turtles, demersal/seabirds and demersal/sea turtles. Each of the sub-groups presented summaries of their deliberations to the rest of the breakout session participants. This was followed by general group discussion and reflection. Common themes emerged in most of the sub-groups:

• Improved international technical coordination among fishermen, gear manufacturers, biologists and others to produce new enhanced mitigation measures. There was less reinventing of the wheel and more emphasis on finding ways of improving information sharing.

• Closing the gap between fishermen and other concerned parties to enable them to work together more effectively and to build coalitions to realize commonly held goals.

• Better inform not only fishermen but also the consuming public of the need for reducing incidental seabird and sea turtle bycatch in longline fisheries and of the progress that has been made by some fishermen and fisheries.

International Agreements and National Approaches

Main Objective: Address possible solutions to the global problem involving the incidental bycatch of seabirds and sea turtles by longline fishing.
Session Leader: John Cooper, University of Cape Town

Participants: Approx. 12 per session

Presentations:

• What Can Be Done to Make International Treaties and Agreements More Effective to Conserve Turtles: Douglas Hykle, Secretariat, Convention on Migratory Species

• Background Information on International Agreements and Treaties with Respect to Conservation: Denzil Miller, CCLMAR

Fishery Impact Assessments:

Participants suggested creating an International Plan of Action (IPOA) for sea turtles; incorporating sea turtles into existing IPOAs; and making international agreements less generalized and more specific. They agreed that funding is critical to implement international agreements, especially for developing countries. Signing international agreements is an indication of commitment, which might attract funding, depending on the scale of the international agreement, e.g., countries, measures, etc. Some participants suggested reducing fishing industry subsidies and developing substantial marine protected areas.

Bycatch Mitigation Measures:

Participants said that legal mechanisms exist globally to implement technical solutions, i.e., a “gear fix.” Regional agreements require consensus to implement, which is time consuming and may be difficult to achieve. Developing countries may lack the resources for implementing gear fixes. They said specificity is only likely under non-binding conservation plans and dispute resolutions may be slow and ineffective. The group concluded that new ideas on mitigating turtle interactions have to be sold to the fishing industry, and good science is essential to do this.

Gear Loss Reductions:

Participants concluded that documentation of lost gear and other marine debris is not standardized. They said fishing gear should include identification marks for the source fishery, as specified in the FAO Code of Conduct. They noted that marine debris such as lost trawl nets not only directly threatens sea turtles but also impacts turtle habitats like reefs in the Northwestern Hawaiian Islands.

Vessel Monitoring Systems and Observer Programs:

Participants concluded that observers recording turtle takes where there is a regulatory take are de facto enforcement officers. They also said instances of coercion and tampering with observer reports could exist when the continuity of fishing is threatened under an international agreement. The group agreed that the remote monitoring of fishing fleets by vessel monitoring systems is only really effective for time–area closures.

Research:

A mechanism to provide fishers with research feedback should be a professional courtesy but not part of a legal instrument. Feedback is also essential for policy makers to evaluate the effectiveness of management measures. The fishermen said they should be involved in research planning and development from the beginning so they can understand why data is collected and what it is used for. A mechanism for the socio-economic impacts of measures implemented under international agreements is needed, the group concluded.

Participants proposed the following additions to international agreements to improve their efficacy:

• Ecosystem approaches to fishery management
• Reduction of subsidies, particularly for large fishing vessels or, transfer of existing subsidies from production to conservation
• Inclusion of Marine Protected Areas
• Inclusion of socio-economic impacts
• Development of a valuation system to compare biological value versus socio-economic values, e.g., risk of species extinction versus human impacts of management measures
• The awareness that management measures in one location may create fishing opportunities elsewhere, i.e., transferred effects
• Exploration of ways to subsidize compliance and conservation in countries that otherwise would not comply
• Implementation of a “tax” on the fishing industry to subsidize compliance and conservation in countries with limited resources
• Incentives or rewards for minimizing turtle catches or for participating in research and monitoring programs
• Eliciting consumer interest, e.g., eco-labeling
• Training and sharing of how-to models
• Reduction of fishing effort and increase in value of fisheries

Modeling

Main Objective: Give participants an appreciation of what modeling is and how it is used. Use the idea of modeling to look at current and projected populations of seabirds and sea turtles.

Session Leaders: Anthony Starfield, University of Minnesota, and Milani Chaloupka, Coastal, Estuary and Waterway Indoorooopilly Sciences Center

Participants: 23

Hands-On Modeling Exercises:
• Building a model
• Using an albatross model to explore the effects of bycatch
• The interaction between bycatch and climatic events
• How many turtles will you catch? A stochastic model

In the first three exercises, participants explored a deterministic model, which means there is no randomness in the models. These types of models can give a different answer only if at least one of the inputs is changed. In the fourth exercise, participants used a stochastic model which has randomness built into it. Stochastic models are used when chance plays an essential part in the calculations. Participants saw that stochastic models required more interpretation than deterministic models.

The industry people found models to be more complex than they had anticipated, but they expressed interest in using them in economic or business type applications. Some managers said the session helped them communicate with modelers or people who used models. The researchers were pleasantly surprised to discover what could be done with simple models, and at least two attendees saw ways in which they might use one of the simple spreadsheet demonstration models. For example, a simple model could be used to convey data needs to those who actually collect the data.

Fishermen Incentives

Main Objectives: Identify effective incentive instruments to minimize bycatch of seabirds and sea turtles in each represented longline fishery, and commit to take specific actions to institute identified promising incentive schemes for their fisheries.

Session Leader: Eric Gilman, National Audubon Society

Participants: 70 total

Presentations:
• Increased fishing efficiency provides an economic incentive for use of an effective seabird deterrent: performance
assessment of an underwater setting chute in the Hawaii pelagic longline tuna fishery: Eric Gilman, National Audubon Society

- Providing incentives through outreach and awareness-raising for the use of mitigation measures for the incidental capture of seabirds and sea turtles in Brazil’s longline fishery: Tatiana Neves, Project Albatroz, Conservacao de Aves Marinas com Pesca Produtiva
- Streamer Line give-away program and regulations in Alaskan Groundfish Fisheries: Greg Balogh, US Fish and Wildlife Service
- Creating Consumer Support for Well Managed and Sustainable Longlining: How a Marine Stewardship Council Ecolabel Could Help: Duncan Leadbitter, Marine Stewardship Council
- BirdLife’s Competition of Ideas: Involving Fishermen to Develop More Seabird-Friendly Fishing Methods: Carles Carboneras, SEO/Birdlife

Session participants were asked to consider the suitability of alternative incentive instruments for specific fisheries based on two central criteria: (a) will implementation of the incentive instruments result in targeted outcomes, outcomes that will significantly contribute towards abating bycatch problems; and (b) is it likely that the incentive instrument can be successfully implemented given the local context. For the second criteria, participants were asked to consider issues such as the expected reaction of stakeholders (industry, seafood consumers and managers).

Participants were asked to identify and commit to take actions to institute incentive methods that they determined are appropriate for their fishery and will achieve desirable outcomes towards resolving bycatch problems. Recognizing that participants may lack authority to make commitments on behalf of their longline company and the entire fishery, their commitments were to take specific actions to attempt to catalyze support to institute a prioritized incentive instrument.

Participants most commonly expressed an interest in instituting bycatch fee and exemption structures, industry self-policing and eco-labeling.

Participants recognized that instituting incentive instruments is especially important in fisheries where available resources and political will for effective management and enforcement are scarce.

Incentive instruments can motivate longline fishers and industry to implement effective actions to avoid and minimize the incidental mortality of sensitive species by tapping their desire to continue their way of life, maximize profit, be perceived by the public as good players, and fulfill their conservation ethic. Of these motives, session participants perceived that the longline industry responds most strongly to economic incentives and disincentives. For instance, mitigation methods that can be demonstrated to significantly increase fishing efficiency have the highest chance of being accepted by industry. And conversely, if regulatory consequences from not adequately addressing seabird and marine turtle mortality have significant enough economic effects and enforcement resources are strong, this will likely result in broad industry compliance with seabird and sea turtle management measures.
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