WARING

ATLANTIC SCIENTIFIC REVIEW GROUP
12-14 December 1995
Orlando, FL
Meeting Summary

The Atlantic Scientific Review Group (ASRG) met in Orlando, FL on 12-14 December, just prior to the Eleventh Biennial Meeting of the Society for Marine Mammalogy. Attending were: Joe DeAlteris, Solange Brault, James Gilbert, Mike Harris, Bob Kenney, Robert McKinnon, Jim Mead, Andrew Read, Randall Wells, Tom Eagle (NMFS), Paul Wade (NMFS), Ben Blaylock (NMFS), Gordon Waring (NMFS), Kim Thounhurst (NMFS), Jim Kraus (USFWS), Jeff Brown (NMFS), Sharon Young (HSUS). Andrew Read acted as spokesperson, Joe DeAlteris, Bob Kenney and Andrew Read chaired meeting sessions and Solange Brault, Jim Gilbert and Randall Wells acted as rapporteurs.

Before the ASRG begun its deliberations, Paul Wade reviewed progress made in implementing the provisions of the Marine Mammal Protection Act as amended in 1994. The ASRG agreed to the following items in this context: the utility of making prioritized recommendations for research by NMFS; the need to review plans formulated by Take Reduction Teams; the identification of critical habitat for strategic stocks (recognizing that a new terminology is required because of the specific use of the term critical habitat in ESA context); a review of the timetable for implementation plans; and the need to formalize a system of integrating new estimates of abundance and incidental mortality as they become available. The ASRG will convene its next meeting in Charleston, SC 9-10 May 1996, in time to provide input on NMFS research priorities. At that time the ASRG will conduct its annual review of strategic stocks.

1. Review of Final 1995 Stock Assessments

The ASRG commended NMFS and USFWS for the timely and useful documents they produced. Ben Blaylock noted that clarifications and updates of material contained in these documents were welcomed by NMFS.

2. Progress on 1995 Research

2.1 NEFSC

During the summer of 1995, researchers from the NEFSC conducted 4 months of ship survey using two vessels. The areas surveyed included the continental shelf, slope and the shelf edge as far south as Chesapeake Bay, the continental shelf from George's Bank to Canada, and the Gulf of Maine (a repeat of past harbor porpoise surveys). The ship survey design was based on the known distribution of strategic marine mammal stocks and surveys concentrated on known areas of high density. A twin otter plane was also used to survey low density areas and to provide duplicate coverage of areas of the Gulf of Maine.

Data collected on these cruises are now being analyzed. Gordon Waring presented preliminary distribution results, consisting of maps of tracklines and sightings. Many sightings were made of sperm and beaked whales near the Gulf Stream wall and shelf edge; large numbers of pelagic dolphins were observed near the shelf edge. Hand-held dart biopsies were successful on bow-riding dolphins, but biopsy attempts on beaked whales were not successful. Sightings made during the 1995 surveys are being analyzed relative to Gulf Stream movements and warm core ring positions. Estimates of abundance from the pelagic dolphins and small whales survey will be available by February 1996.
March-April 1996

The abundance estimate from the harbor porpoise survey will be available by January 1996 and a report on the comparison between shipboard and aerial survey results will be available by April 1996. The analytical methods will the same as those used to derive the 1991-92 estimates, so interannual comparisons can be drawn. Based on preliminary analysis, the 1995 estimate is not likely to be lower than those of previous years. Read asked whether there will be any adjustments of estimates to account for rapid long-distance movement of porpoises, as observed from satellite telemetry: Palka has been looking at patterns of movements related to fisheries, but no methodology for assessing potential bias due to this source has been developed. Waring reviewed the results of a recent survey of harbor porpoise distribution in the Gulf of Maine, George's Bank, and Cape Cod Bay during the months of September & October; poor weather made surveys impossible in November. NEFSC will host a workshop in 1996 to review methods for estimation of abundance from line transect surveys.

The ASRG raised the possibility of joint surveys with Canadian scientists on cross-boundary stocks. Waring noted that there were discussions several years ago with Canadian scientists, but believed that no current funding was available for such projects in Canada, although aerial surveys of harbor porpoises in the Gulf of St. Lawrence are coordinated with NMFS aerial surveys in the Gulf of Maine and Bay of Fundy. The ASRG questioned whether common dolphins are present in Canadian waters during the summer months; this is of importance because of the large numbers of incidental takes relative to known abundance in US waters.

Waring also reviewed progress on estimating bycatches in the large pelagics drift gillnet and pelagic pair trawl fisheries, which continue to be problematic. Beaked whales are taken in drift nets from the mid-Atlantic shelf edge to the Canadian border. It is believed that no similar drift net fishery exists in Canada, but this issue needs clarification. Two takes of sperm whales have been made in the drift net fishery. Three humpback whales have been observed taken in drift nets, in winter (south) and summer (north). Two minke whales and a single right whale have also been observed taken in drift nets. Large numbers of common dolphins are taken in both fisheries, mostly near canyons south of George's Bank, but it has not yet been possible to determine whether more than one stock or species is involved. Striped, spotted, bottlenose and Risso's dolphins are also taken in this fishery. Pilot whales are taken in both drift net and pair trawl fisheries; species identification remains a problem as the biogeographic boundary between long- and short-finned pilot whales is not clear. A draft report of these bycatches by fishery has been completed and will be finalized soon. The ASRG asked for this report to be available before its April meeting.
Northridge OOC.

2.2 SEFSC

Ben Blaylock reviewed recent abundance surveys conducted by SEFSC. A shipboard survey was performed in the Caribbean during the winter of 1995. An aerial survey was conducted in spring 1995 along the Atlantic coast to 5 nm past the Gulf Stream wall, with much bad weather. The results of these surveys have not yet been analyzed.

An aerial survey was run from Cape Hatteras, NC to Sandy Hook, NJ in July 1995, in the range of migratory coastal bottlenose dolphin stocks. Latitudinal transects were set 5 nm apart to the 25 fathom isobath, and replicated 3 times. Most sightings were in the southern area. The abundance estimate generated from this survey was 11,374 individuals (7,500-17,000 95% CI), but the proportion of offshore animals in the sample is not known. No estimate of g(0) was incorporated in the analysis.

There was no Gulf of Mexico *Tursiops* survey this year; the next survey is scheduled for fall 1996, and will cover the inshore areas only. Research using photo id methods is being conducted in the northern Gulf of Mexico to explore residency patterns of *Tursiops* there. A workshop is planned for March 1996 to coordinate researchers working on *Tursiops* photo-identification along the SE Atlantic coast.

A health assessment survey was conducted in the estuarine waters near Beaufort, NC in the summer of 1996. Thirty-one *Tursiops* were captured and held briefly for veterinary analysis and collection of biopsy samples. Nine of these animals were radio-tagged, and showed high mobility; a contract report describing this work is in progress.

3. Plans for assessments of strategic stocks in 1996

3.1 NEFSC

3.1.1 Assessment of Present information

See 10-2 Conflict.

As noted above, the harbor porpoise abundance estimate from the 1995 surveys will be available in late January. Estimates for other species will be completed in late March or April. The 1994 harbour porpoise by-catch for the groundfish sink gill net fishery will be completed in late January. This estimate will use a different measure of fishing effort than earlier measures. Estimates of effort from 1994 and 1995 will be based on log book information; those prior to 1994 had been based on port agent interviews and weighout landings slips from dealers. The logbook system has had a series of problems. Bob McKinnon reported that there was some initial confusion within the industry over reporting procedures. Some have doubted the veracity of logbook data that appear to be filled out after the fact. There have been software problems and delays in obtaining all logs at NEFSC. The ASRG is concerned that the backlog of data entry is hampering formulation of a measure of fishing effort. The ASRG is also concerned that there has been no overlap between the old and new methods of measuring effort; therefore there is no way to calibrate the old and new systems to allow comparisons. Finally, the ASRG **recommends** that

the production of harbor porpoise mortality estimates from the sink gill net fishery in the Gulf of Maine be expedited to allow for more timely management action. Andy Read will draft a letter to NMFS from the ASRG to this effect.

3.1.2 Planned assessments

As part of a plan to rotate surveys among species, NEFSC next year will be conducting a 45 day shipboard survey in late June through mid-July in the areas of the drift gill-net fishery. In addition to obtaining survey data, there is potential for collecting by-caught beaked whales from the fishery. Some biopsy sampling and fine tuned habitat analyses are also planned. Money for the assessments is presumed to be about the same level as last year, with reallocations to research base budget.

3.2 SEFSC

Gulf of Mexico rotation survey of bay, estuarine, and near-shore *Tursiops* will be in the Western Area in 1996. The SEFSC is negotiating with NBS and MMS to conduct two shipboard surveys for the 100-1000 m isobath area from the Mississippi Delta to Tampa Bay. There will also be two associated aerial surveys of the study area. The photo-identification work to identify stock structure will be continuing at a low level. The Center plans to have a program review that will evaluate this activity. Stranding networks are providing useful data on possible fisheries interactions and there will be an effort to standardize these data collection procedures to allow for more rigorous interpretation. An emerging coastal shark gillnet fishery along the South Atlantic Coast is cause for some concern. There are apparently two such fisheries, one in waters 3 - 6 miles off shore and another "cottage" fishery based on small boats. There will be an effort to coordinate any joint NEFSC/SEFSC surveys in 1997 with IWC surveys across the Atlantic.

4. Progress in formulating Take Reduction Teams

Six Take Reduction Teams are planned:

Gulf of Maine Harbor Porpoise
Right/Humpback whales in Northeast
Atlantic Offshore Cetaceans
Pelagic Cetaceans (Pacific)
Atlantic Coastal Bottlenose Dolphin
Alaska Marine Mammals

The Harbor Porpoise Team has been formed and will meet in early 1996. The Atlantic Offshore Cetacean team is on track, the baleen whale and the bottlenose dolphin teams are being delayed.

The purpose of these teams is to reduce by-catch; in some of these situations not enough information yet exists to allow the take reduction teams to formulate recommendations.

The ASRG noted a variety of difficulties, including partitioning the PBR among areas and fisheries. The US has joined NAFO (North Atlantic Fisheries Organization), which may allow us to bring by-catch issues to international arenas. Several members of the ASRG expressed concern that consensus may not be achievable with such a large number of members (20-24) on the harbor porpoise take reduction team. The wording of the charge to the task force will be important in determining whether consensus can be achieved. NMFS will have representatives on the team.

5. Stocks of Particular Concern

5.1 Gulf of Maine *Phocoena*

Much of this information has been previously reviewed. Andrew Read presented some of the recent progress in his research. A paper on harbor porpoise life history was recently published. This information is being used by Brault, Caswell et al. to develop a demographic model for the stock. Stomach contents from about 150 specimens are being analyzed to determine food habits. Satellite tags were attached to six porpoises in weirs at Grand Manan Island last August. The movements of these animals support the hypothesis that harbor porpoises in the Gulf of Maine form a single stock. More tags will be attached next year. Forty-five porpoises were examined in a recent necropsy session at the Smithsonian Institution. All of these animals stranded south of New Jersey and were 8-10 months old; many were emaciated or had net marks. The stranded porpoises had been feeding on coastal species such as bay anchovies and cusk eels. The Department of Fisheries and Oceans - Canada has issued a draft Conservation Plan for the Harbor Porpoise.

The New England Fisheries Management Council has recently increased the time and extent of closure areas for groundfish gill net fishing to reduce porpoise bycatches. There was discussion regarding how NEFMC would modify its procedures and goals for harbor porpoise protection in response to the MMPA amendments and the recommendations of the Harbor Porpoise Take Reduction Team. The alternatives of Amendment 7 of the NEFMC were summarized. Last year's pinger experiment to reduce by-catch of harbor porpoise in groundfish gill nets was promising. The SRG noted that this year's pinger trial is allowing fishing in a closed area if pingers lacks any control and is not a scientific experiment. Pinger design and certification was discussed. To be effective the devices must emit with a particular frequency range and have at least a 30 day battery life. The effective frequency range is not known. The determination of the status of the species under the Endangered Species Act is under review by NMFS. The NMFS will allow other processes, such as the Take Reduction Team, to address harbour porpoise conservation during the near future.

5.2 Mid-Atlantic Coastal *Tursiops* - progress in stock definition

There is no research being conducted now that will give resolution of this stock definition question in the short term. Barbara Curry's Ph.D. thesis will likely not address this question because of a lack of inshore samples. NMFS does not have genetics sampling as a scheduled priority. The Review of Funding Priorities has identified stock structure as a priority, with the distinction of inshore and off-shore stocks of mid-Atlantic Tursiops used as an example. Mitochondrial DNA work of coastal *Tursiops* shows a gradient around the coast from Texas to the mid-Atlantic states.

5.3 Beaked Whales

Gordon Waring reported on NMFS efforts to improve the ability of shipboard observers to identify species of beaked whales. Beginning in 1993, attempts have been made to identify specific beaked whales during George's Banks surveys by breaking from line transects for photographs and behavioral observations. The use of big eye glasses has improved identifications, because the whales tend to react negatively to approach by the survey vessel. Observers from the west coast were used in July to help train east coast observers in species identification. The observers can now identify three species: North Sea, Blainville's, and True's beaked whales based on looks and behavior. Most sightings continue to be scored as "beaked whales" unless the observers are confident of the species identification (descriptive information and sketches are included as "comments" on data forms). More work on species identification is necessary, but because it detracts from abundance estimation to approach the species identification question, it would be desirable to concentrate dedicated efforts in areas where beaked whales are known to occur, along the north wall of the Gulf Stream and on the shelf edge, for example. Efforts are underway to post-stratify existing data to identify beaked whale habitat more specifically. Analyses consider four habitat strata: Gulf Stream, slope, edge, and shelf. Data can be further stratified based on other features such as warm core rings.

Other species identification efforts include photographs and samples collected by observers in the fisheries -- whole animals, heads, or jaws. Several animals stored at the Smithsonian Institution will be necropsied in January. The question was raised as to whether species can be identified from samples through existing biochemical genetics methodology. It is believed that Andy Dizon at SWFC can do this. The ASRG **recommended** that tissue samples from beaked whales be sent to Andy Dizon to be run in the blind. Last year only two of 14 beaked whales reported by observers were sampled. The ASRG **recommends** that the observers be equipped with, and trained in the use of, sampling gear such as "stick poles" to increase the level of sample collection.

Research next summer will attempt to recover bycatch from the swordfish drift net fishery by operating a research vessel in the area where the 10-day derby is occurring. About 10-12 boats participate in the fishery during the summer, and a single boat operates in a later winter fishery. Cetacean carcasses will be brought to the research vessel, where necropsies will be conducted. Surveys will be conducted and biopsy sampling of living animals in the same area will be attempted. It is hoped that this will provide information needed both for species identification of beaked whales and common dolphins, for example, as well as aiding in distinguishing between stocks of bottlenose dolphins.

In response to a question about the willingness of fishermen to participate in this research, the issue of developing incentives relative to the PBR was raised. Fishermen have suggested that they would be willing to work with a bycatch "quota." Can or should PBR be allocated within a small fishery with a small bycatch? Currently, no PBR is calculated for beaked whales, but it would probably be about four. The actual take is 34. Would it be possible or advisable to establish an "individual-based incentive" from PBR and ZMRG, and then ratchet the quota down annually? By law, the Take Reduction Team will have to achieve PBR within 6 months, but perhaps the remaining quota could be ratcheted down to ZMRG over the next few seasons. Concern was expressed regarding the timetable for implementing this reduction -- will it be possible to achieve? A similar process was used in the ETP -- this should be examined. Perhaps boats carrying observers could be allowed to continue to fish until the fleet quota is reached. It would be helpful to examine previous take data to determine which vessels have fewer or more takes, and evaluate the reasons for these differences. It was suggested that some of these ideas might be implemented before next summer's derby.

The quality of the abundance estimates for beaked whales was questioned, relative to the possible PBR and lack of incentives for fishermen to work toward ZMRG after reaching PBR. The existing abundance estimates were identified as "risk averse" and considered to be underestimates. The ASRG **recommended** that more information on correction factors be collected in order to improve beaked whale abundance estimates. Data on diving behavior from behavioral observations and tracking of animals with radio transmitters would be very useful in this regard.

5.4 Manatees

Jim Kraus presented a review of manatee management activities during 1995. The top priority was completion of revisions to the manatee recovery plan, which will chart the course for manatee conservation efforts for the next five years. It is basically completed; all that remains is for it to be approved, signed, and distributed. Kraus expects the plan to be released early in 1996. The second priority has been publication of the proceedings of the manatee population biology workshop. This has gone to the printer, but uncertainties regarding the future of the NBS have put printing on hold.

There was considerable rescue and rehabilitation activity during 1995. More than 40 manatees have been rescued, and 19 have been released in an effort to reduce the number in captivity. Four of these were released from the soft-release site at Merritt Island; all were equipped with satellite transmitters.

The number of extralimital events, or at least the awareness of occurrences, has increased this year. "Chessie," the manatee that was captured in Chesapeake Bay in 1994, traveled to Rhode Island and returned to Florida. A manatee was removed from a sewage outfall in downtown Houston, and taken to Sea World, TX, for holding until it can be released into warmer water. A manatee is currently at New Orleans. The general FWS policy is to not capture each manatee outside of the "normal" range unless its situation is life threatening.

The budgetary outlook for the manatee program is uncertain. It appears that the Sirenia Lab of NBS will suffer a severe cut. The FWS program is being re-organized to an ecosystem management approach. Concern was expressed about how management of animals that don't restrict themselves to single ecosystems as defined by FWS will be accomplished. The future of the recovery plan budget is unclear.

There has been little recent activity on manatee conservation in Puerto Rico. There are currently no captive animals, though one manatee was lost accidentally during rehabilitation efforts. The most important issue in Puerto Rico is the need to revise the recovery plan for the Antillean manatee, incorporating NBS information collected since 1986.

Manatee stock assessments will not change for 1995. Synoptic aerial surveys flown by 18-23 groups in conjunction with cold fronts found 1822 manatees (record high = 1856 in 1992). Mortality rate in 1995 has been comparable to the high level recorded for 1994 (193 deaths in 1994). Mortality data come from carcasses collected or investigated by staff from five field Florida Department of Environmental Protection field stations and 11 non-government organizations. It is estimated that at least 90% of carcasses are recovered. Carcasses are taken to the DEP necropsy facility in St. Petersburg; monthly mortality reports are generated.

Questions were raised regarding the apparently conflicting estimates of rate of increase in the stock assessment report. These remain unresolved.

Manatees are known to overwinter in small numbers in Georgia, Mobile Bay, and now Louisiana. In Georgia, the animals are taking advantage of anthropogenic sources of warm water. These sites are being eliminated in the interest of returning the animals to their original range in the St. Johns River and Brevard County in Florida.

The identification of different stocks of manatees was discussed. Could the manatee from Houston and the cow/calf seen in Galveston have originated in Mexico, thus representing an incursion of a subspecies? The nearest reported stock in Mexico is in Yucatan. Blood samples from the Houston manatee are being examined for genetic analysis. No management decision has yet been made regarding the separation of Florida east and west coast manatees into different stocks.

State (Florida) manatee protection actions were also described. Thirteen coastal counties are devising manatee protection plans as part of their comprehensive growth management plans. These plans compare manatee habitat and distributions to areas of human activities. One of these county plans is in place. Most of the effort to date has been in the development of boat speed zones, and some level of speed control is in effect in all 13 counties. These are often controversial, with levels of opposition varying from county to county, and difficult to implement.

A Take Reduction Team has not been established for manatees, primarily because fisheries interactions have not been identified as a major source of injury or mortality. Watercraft-related mortalities and water control structure-related mortalities are the primary concerns, and these are addressed by the Recovery Plan. There is some concern that crab pot entanglements may be a

significant source of injury and/or mortality, and may become a larger problem as the Florida net ban has pushed more fishermen to crabbing. The ASRG **recommends** that mortality data be broken out within the next year to identify different kinds of fishery interactions. This will allow an objective determination of whether some fishing activities should be reclassified to reflect their impacts on manatees (the crab fishery is currently classified as Category 3).

6. Habitat Issues

One of the most important habitat issues facing stocks of marine mammals in the Atlantic and Gulf of Mexico is the evaluation of the effects of contaminants on bay, sound, and estuarine bottlenose dolphins. Much of the available information has come from measures of contaminants in stranded carcasses. The ASRG **recommends** that a compilation of available information be made to provide direction for continued sampling and analysis of tissues from stranded animals. Questions or issues to be addressed by particular sample analyses should be clearly identified before funds are committed to analysis. Of perhaps more vital importance than examining concentrations in carcasses is the determination of the medical effects of contaminants in living animals. Contaminant levels can be determined through analysis of blood, milk, or blubber samples. Veterinary examinations and modern immunological techniques can be used to assess the health status of the animals. This approach has the advantage of allowing the identification of potential problems before they lead to mortalities. Examination of sublethal effects provides the most promising avenue for identifying true cause and effect relationships between specific contaminants and concentrations, and medical conditions. This can lead to a prioritization of efforts relative to particular classes of contaminants, or particular sites where threats are most clear.

Concern about the potential impacts of the outfall pipe on right whales in Massachusetts Bay was expressed, but the oceanographic community appears to be satisfied that it will be an improvement over the current situation, except in the near field.

Acoustic deterrents for seals near aquaculture facilities may have impacts on other marine mammals. When tested in British Columbia, harbor porpoises were excluded from a distance of at least 3.5 km. These potential impacts should be examined in greater detail. Controlled experiments for the impacts of most forms of noise in the marine environment are lacking.

Aquaculture facilities may also pose a threat to some cetacean species proposed for development such as right whales and humpback whales. Scallop facilities in Massachusetts are being developed in critical whale habitats. It was noted that NMFS has promoted the development of aquaculture at the same time as it is required to protect marine mammals, so conflicts may arise. Little relevant aquaculture activity is underway elsewhere, except possibly in Alabama.

Other habitat issues that should be considered include potential disturbance from oil development, recreational boating, and military activity. It was reported that the military is developing a new littoral warfare site off Onslow Bay. This site will be equipped with passive listening capabilities that may be of use for tracking fish or marine mammals. It is scheduled for construction in 1998. Another hydrophone site is being established off Block Island.

7. Response to HSUS Request

A letter from Humane Society of the United States Wildlife specialist Sharon Young to the ASRG on 4 December 1995 requested the following:

"We are also concerned that a recent Federal Register notice found that fisheries takes of endangered large whales on the east coast (humpback, northern right, and fin whales) were occurring at a level that was not considered negligible; and that such takes should be prohibited. Previous Federal Register notices have acknowledged that a number of fisheries kill, seriously injure, or in some way interact negatively with these animals. We would like to request that the ASRG consider recommending to the NMFS that they undertake a Section 7 consultation under the Endangered Species Act that would assess the cumulative impacts of fisheries on each of these species."

In light of discussion regarding the various options available to the NMFS, the ASRG **recommends** that the cumulative effects of several fisheries need to be considered, not just fishery by fishery.

8. Research Priorities

The ASRG was asked by NMFS to assist in the development of research priorities for the agency. NMFS has identified five "bins" into which they place research proposals for consideration: stock assessment, including stock identification and abundance estimation, mortality estimation, bycatch reduction, conservation and recovery plans, and other. The ASRG identified research needs in each of these categories and ranked them according to their utility in assisting in stock assessment. At this time, the ASRG limited its consideration to **strategic stocks**. At its meeting in April 1996, the ASRG will review and modify this list of research recommendations in the light of new information and stock assessment needs.

May 1996 (see pg 1)

8.1 Stock Assessment: Species and Stock Identification

In general, the questions about identifying species were considered to be higher priority than stock identification questions:

1. Improve species identification of beaked whales, using necropsy data, photographs, and tissue samples to enable identification of species in bycatches and during surveys.
2. Determine whether more than one species of common dolphins exists in the Atlantic.
3. Develop the ability to distinguish between long- and short-finned pilot whales in bycatches and during surveys.
4. Differentiate components of the "coastal migratory stock" of bottlenose dolphins. While this issue is most pressing for the depleted coastal migratory stock, related questions exist in the Gulf of Mexico relative to die-offs in recent years. These questions should be addressed through a combination of techniques, including photographic identification studies, genetics, and telemetry.
5. Harbor porpoise stock identification. The number of stocks impacted by fisheries is unknown. It is not known to what extent Canadian takes affect porpoises that also range into US waters.

6. Sperm whale stock structure. How widely do sperm whales range? Is there a single stock in the North Atlantic? Genetic studies using samples of sloughed skin or from stranded sperm whales should be examined to address this question.

8.2 Stock Assessment: Abundance Estimation

1. (tie) Research is needed to address the number of deep-diving whales and other pelagic species that are being missed during line-transect surveys - estimation of g(0). Research does not have to be performed in the Atlantic if data from the similar species are collected elsewhere.
1. (tie) Develop the ability to differentiate between inshore and offshore stocks of bottlenose dolphins during surveys. A combination of techniques, including surveys linked with biopsy sampling, photogrammetry, identification of physiographical correlates, should be applied.
2. Estimation of abundance of stocks of bottlenose dolphins and pilot whales in waters of the US Caribbean Sea.

8.3 Mortality Estimation

1. In general, better determinations of fishing effort are needed from most fisheries in the Atlantic and Gulf of Mexico that interact with marine mammal stocks.
2. Better information on effort and quantifying of incidental catch data is needed for the mixed coastal gillnet fishery of the Atlantic coast.
3. Information on the large mesh shark drift gillnet fishery in Georgia and Florida is needed. Given that so little take has been reported from this fishery, it would be worthwhile to look at why this is so. How are observers used in this fishery?
4. The Atlantic midwater trawl fishery for squid, mackerel, and butterfish apparently is taking a variety of cetaceans. This take should be investigated.
5. Increased efforts should be made to standardize the collection and reporting of information on fisheries interactions from stranded cetaceans.
6. Increased efforts should be made to detect strandings in areas not currently observed with any frequency.

8.4 Bycatch Reduction

1. Harbor porpoise bycatch mitigation measures, such as pingers, should be examined in greater detail. Alternative pinger designs, identification of the pinger features of importance to the porpoises, improvements in cost, battery life, and durability, and a procedure for certification of pingers should be considered.
2. Operational causes of variability in bycatch should be explored through gear modification research.
3. The concept of individual bycatch "quotas" or other means of allocating PBR within and among fisheries should be explored.
4. Research should be done to determine why certain vessels are taking beaked whales and other pelagic cetaceans at higher or lower rates than are others.

8.5 Recovery and Conservation Plans

1. The recovery plan for the Antillean manatee should be updated, incorporating NBS information collected since 1986.

8.6 Other

1. Indirect human-induced mortality and the effects of environmental contaminants on reproduction for coastal bottlenose dolphins need to be investigated in more detail. Health assessment research may be able to quantify the effects of some contaminants on sensitive response parameters such as immunological function. In this way, bottlenose dolphins can serve as a useful ecosystem model.
2. Observer collection of life history samples (reproductive tracts, mammaries, jaws, stomachs) should be improved, and these samples should be processed expeditiously. It would be best for whole carcasses to be recovered. The ETP sample collection should be explored as a model.
3. Site-specific population monitoring of bottlenose dolphins at long-term research sites should be continued to provide the means for assessing changes in key populations, and because they provide models for understanding the processes of coastal dolphin populations. In some cases these population monitoring studies are linked to health assessment monitoring programs, as described and ranked above.

9. Other Business

The ASRG needs to replace two members who have resigned. It would be desirable to include a physiologist and someone with regional expertise in the northern Gulf of Mexico. Graham Worthy of Texas A&M University was suggested, and the ASRG considered him to be appropriate. Ben Blaylock offered two suggestions for potential members from Louisiana. The ASRG asked to see CVs from these nominees. The Centers and Regional offices will consider nominees and refer them to the Office of Protected Resources. Before adjourning, Andrew Read agreed to continue in his present role as spokesperson for the ASRG.