

Ocean Resources

Section 309 Enhancement Objective

Planning for the use of ocean resources

Resource Characterization

Purpose: To determine the extent to which problems and opportunities exist with regard to the enhancement objective.

1. In the table below characterize ocean resources and uses of state concern, and specify existing and future threats or use conflicts.

Resource or use	Threat or use conflict	Degree of threat (H,M,L)	Anticipated threat or use conflict
Critical Ocean Habitats: cold water corals, canyons, migration corridors, sand shoals)	Damage from ship traffic, fishing gear, energy project exploration, construction and operation	H	As offshore activities increase, habitats are more likely to be damaged. Climate change may result in shifts of habitat locations and ocean acidification may destroy corals
Fisheries	Habitat loss, overfishing, expansion of caged aquaculture, excess capacity in fisheries	H	Water quality, secondary impacts on watersheds, habitat loss, alternative energy infrastructure siting, climate change
Energy Development Projects: Wind, Oil & Gas	Withdrawal of federal moratorium on offshore oil and gas development	H	Potential offshore natural gas development; increased demand for domestic oil. Two major wind farms have been proposed off Virginia's coast. Proper siting is critical.
Sand	Impact to sand resources exists due to mining (efforts are taken to identify areas for mining with the least impact on benthic and fishery resources).	M	Severe storms may increase need for sand dredging for beach nourishment which could have associated benthic and fishery resource impacts

2. Describe any changes in the resources or relative threat to the resources since the last assessment.

Habitat loss

Habitat necessary for fish, bird, marine mammal and sea turtle breeding, foraging and migration is under threat from coastal development, secondary impacts on watersheds, sand mining, dredging, trawling, shipping, and infrastructure for oil and gas extraction, and wind and hydrokinetic energy. Current and potential use conflicts abound. Deep sea or cold water corals have been recently identified in the Mid-Atlantic Ocean and need to be better mapped and protected. In addition, while the offshore canyons are known to provide important habitat for various marine species, more needs to be known about them before additional human uses are allowed in those areas. Since the last assessment, researchers have found even more evidence of the importance of the Virginia coast, particularly the Eastern Shore, to migratory birds. Of particular note is the recent work on red knots and whimbrels which are heavily relying on the Eastern Shore as a stopover habitat where they feed and gain significant weight to fuel their incredibly long migrations to points as far as Alaska and Tierra del Fuego, South America. Much more research is needed to truly understand their migration routes and their habitat needs to ensure these bird populations' precipitous declines do not continue.

Overfishing

Overfishing remains a threat to some fisheries, while in others, incomplete data provide only a vague picture of what is happening in a population. Safeguards are in place to prevent overfishing theoretically, but between incomplete data, complications caused by multi-jurisdictional management responsibility, enforcement difficulties and economic drivers, sustainable harvesting is not a guarantee.

Expansion of caged aquaculture

Use conflicts arise between recreational boaters and waterfront property owners who find shellfish aquaculture cages unsightly, and a threat to navigation, however this activity is usually conducted near shore, not out in the open ocean. (*For more information, see Aquaculture assessment.*) Depending on the scale and type of aquaculture, other types of user or ecological conflicts may occur. Shellfish aquaculture may provide ecological benefits, including water filtration. Cultivation of shellfish or macroalgae in cages tied to energy project structures may provide additional value to an energy development project.

Excess capacity in the fisheries

Currently, some fisheries have high levels of excess capacity (such as blue crabs, summer flounder, sea scallops). Excess capacity jeopardizes the economic viability of fisheries and can lead to overfishing. A fishery disaster was declared in the Chesapeake Bay blue crab fishery by the U.S. Secretary of Commerce in 2008 and Virginia is now administering a NOAA program to buy back commercial crabbing licenses. In November of 2009, the Virginia Marine Resources Commission bought back 359 commercial crab licenses in order to aid the species

rebuilding effort. The license buyback translated to 75,441 crab pots taken out of use, and almost 20% reduction in the overall number of pots. Additionally, the New England Fishery Management Council is taking action to address excess capacity in the sea scallop fishery in Amendment 15 to the fishery management plan by considering options to allow permit stacking and leasing.

Future Threats

Energy infrastructure

The federal moratorium on oil and gas development in the Mid-Atlantic was lifted in 2006, which could present a threat to fisheries, cold-water corals and other marine life from exploration techniques, direct damage and potential oil spills. Governor McDonnell came into office in January 2010 and has expressed his interest in offshore oil and gas development. Interest and plans for developing alternative energy infrastructure as a means of reducing greenhouse gas emissions and dependence on foreign oil have greatly increased since the 2005 Section 309 assessment. Wind energy development could have some undesirable impacts on marine habitats and species, including birds, marine mammals and sensitive benthic habitats if they are not appropriately designed, located, and operated. Additionally, offshore wind or hydrokinetic energy development may limit or preclude existing human uses of the ocean including fishing, shipping, recreational boating, and sand mining. Both types of offshore energy development (renewable and non-renewable) would increase maritime traffic which may pose a threat to migrating marine mammals and sea turtles. However turbines and oil & gas rigs can attract fish and increase fishing opportunities. Appropriate siting is key and that will prove difficult without better data than is currently available.

Climate change

Changes to oceans caused by climate change are probably occurring faster than humans are able to react to them. According to the US Ocean Commission's "*An Ocean Blueprint for the 21st Century*," possible future threats include:

- sea level rise, increasing the likelihood of coastal flooding and submergence of coastal wetlands;
- ocean temperature increase, harming species that depend on eelgrass because of reductions in eelgrass which requires colder water temperatures (although this may be mitigated by increased CO₂ levels);
- a changing distribution of fish species due to changing ocean conditions;
- increased variability in salinity due to more extreme weather patterns;
- greater stream flows in the winter and spring, increasing the amount of sediment washed into the water and thereby leading to hypoxia; and
- higher CO₂ concentrations, promoting the growth of harmful algae such as dinoflagellates;
- ocean acidification, leading to reduced growth rates of shellfish and corals and potential loss of the ability to form a shell or a reef.

Information on specific species

SAVs

In 2005, there was a massive SAV die-off in the Chesapeake Bay, which was attributed to a very warm summer, leading to excessively high water temps that the grasses could not withstand. Eutrophication due to stormwater runoff has also been a stressor on SAV. While the SAV beds are far from restored, there have been some improvements. Between 2007 and 2008, SAV increased by 18%. Restoration efforts have been extremely successful on the ocean side of the eastern shore where there are fewer pollution sources. Collaborative efforts by NOAA, Virginia's Coastal Zone Program, VIMS, VMRC, The Nature Conservancy and hundreds of volunteers have produced the world's largest successful sea grass restoration project. Where seeds have been planted, beds have grown rapidly, with planted areas expanding to over 2,400 acres. The bay side has not fared as well, due to problems with water quality and clarity.

Blue Crabs

The blue crab fishery has been struggling since 1993, having been unresponsive to harvest cuts. Virginia entered into an agreement with Maryland in 2008 in an attempt to reverse the decline. Both states implemented new regulations to close harvesting seasons early and reduce catches of female blue crabs by 34%. Since the regulations took effect June 1, 2008, initial scientific evidence has shown that blue crab populations have increased significantly above the interim biomass target. One year after implementation, blue crab numbers were above the target population threshold for the first time in 16 years. The agreement continued through 2009. This was an important fishery for Virginia to take action on because it is among Virginia's most valuable fisheries. Currently it is a \$25 million fishery, although it has historically been as high \$60 million.

Habitat loss is a major component of blue crab population decline. Juvenile crabs depend on sea grass beds, which have been dying off since the 1950s due to poor water quality.

Horseshoe crabs

Horseshoe crabs are harvested for use as bait for eel and conch fisheries and also to provide blood for the biomedical industry to produce *Limulus Amoebocyte Lysate*, an important tool in the detection of contaminants in drugs and medical devices. Due to concerns over the importance of their eggs as an important food source for red knots and other migrating shorebirds on the Atlantic seaboard, the horseshoe crab fishery has been subject to extensive regulation over the last ten years. Current landings and survey data indicate their population status has improved and remained relatively stable over the last five years. The intent of current regulations is to protect horseshoe crabs that have high likelihood of spawning in the Delaware Bay. Harvesting male and female horseshoe crabs is prohibited from January 1 through June 7 in the Delaware Bay, and is restricted to 100,000 males per state from June 8 through December 31. No more than 40% of Virginia's quota may be landed from ocean waters and those landings must be comprised of a minimum male to female ratio of 2:1. The fishery is not completely rebuilt, but is improving.

In order to improve horseshoe crab management, the ASMFC has collaborated with NFWF to establish an Adaptive Resource Management model, which would approach natural resources management from the perspective of managing ecological interactions. The model is currently under peer review, and expected to inform addendum VI of the Interstate Fisheries Management plan for 2010.

Oysters

The wild oyster fishery in Virginia has shown little improvement over the past five years, and has basically collapsed. Two diseases are hurting the population: MSX (caused by the parasite *Haplosporidium nelsoni*) and Dermo (caused by the parasite *Parkinsus marinus*) and both have been found to be more virulent in high salinity, warm, drought conditions. The disease infects oysters more than a year old, but tends to kill them when they are too small to market. There is still some oyster harvesting occurring, though it is currently less than 100,000 bushels per year, compared with annual harvests that were once 3 to 5 million bushels.

In 2007, a blue ribbon panel assembled by the Virginia Secretary of Natural Resources issued a report making several recommendations to restore oyster populations. These included increasing state funding for Virginia Marine Resource Commission oyster restoration efforts to \$2.5 million per year, expanding hatchery capacity, training commercial fishermen in aquaculture, implementing a rotational harvest system, creating sanctuaries closed to harvest in perpetuity, and implementing a size limit on harvested oysters. VIMS research has shown that some older oysters are surviving MSX and Dermo, meaning that natural selection may allow the oyster population as a whole to survive. However, this can only occur if the disease-resistant oysters are allowed to reproduce and pass on their genes. Therefore, protecting them from harvest is imperative. There is considerable interest by agency staff and resource stakeholders in finding ways to improve conditions for expanded oyster aquaculture to reduce pressure on wild stocks and provide alternative employment for members of Virginia's fishing communities.

Sea Scallops

Sea scallops are the state's most valuable fishery, and are harvested offshore, in federal waters, so are regulated by the federal government. The use of closed areas in the rotational management strategy has been highly effective at optimizing biological yield in the fishery and reducing effort by maximizing catch per unit of effort.

Menhaden

Regulatory responsibility for menhaden is still under the authority of the General Assembly, which placed a harvest cap on the fishery for the first time ever in 2006 in response to the Atlantic States Marine Fisheries Commission's (ASMFC) management plan. The cap was extended through 2013 with the approval of Addendum IV by the ASMFC. Since the cap was put in place only four years ago, it is too early to determine its effect. The quota was partially intended to prevent the expansion of harvesting, and in this aspect it has been successful. The fishery was not considered to be overfished—the quota was a preventative measure, not one prompted by crisis conditions.

However, that determination was made from a single species perspective. Measuring fishery health from an ecosystem perspective yields different results. Menhaden serve multiple functions in ecosystems—they are filter feeders, as well as an important forage species. Preliminary results from a 2009 VIMS assessment using a multi-species predator-prey model indicated that the fishery still is not overfished, but getting close to the threshold of being overfished. The ASMFC 2010 Action Plan includes goals to work with the scientific community to develop ecological reference points for menhaden, as well as to monitor the fishery for consistency with management parameters and state compliance.

The Chesapeake Bay menhaden research effort, established by Addendum II to the Interstate Fishery Management Plan in 2005 and supported through federal and state resources, continued in 2008. Its goal is to determine the status of menhaden in the Bay, assess whether localized depletion is occurring, and support future menhaden management decisions.

American Shad

The American shad fishery has collapsed and continues to be under harvest moratorium, as it has since the mid 1980s. In 2009, the Virginia Department of Game & Inland Fisheries, US Fish and Wildlife Service, Virginia Marine Resources Commission, Interstate Commission on the Potomac River Basin, and Potomac River Fisheries Commission collaborated on a program to restore American shad. Eggs were harvested from the wild, incubated and hatched in a USFWS facility, then used to stock the James, Rappahannock, and Potomac Rivers.

Black Sea Bass

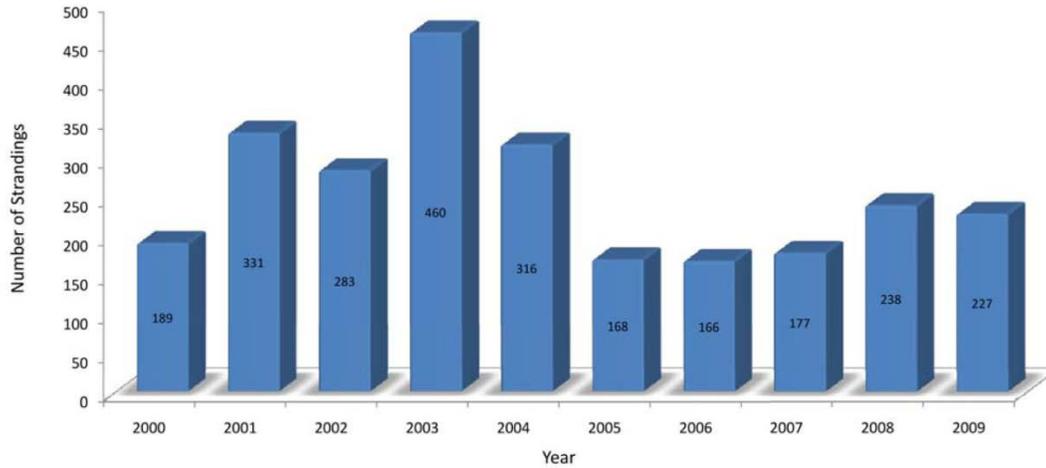
Black sea bass are jointly managed by the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Fishery Management Council. In Virginia, the quota for Black sea bass has been cut every year for the past five years in an effort to rebuild the population to a stable point. The fishery tends to be data poor. Excess harvests have been terminated, and the species was declared rebuilt by the National Marine Fisheries Service in 2008. In November 2009, ASMFC approved commercial quota transfer between states for black sea bass quotas.

Sea Turtles

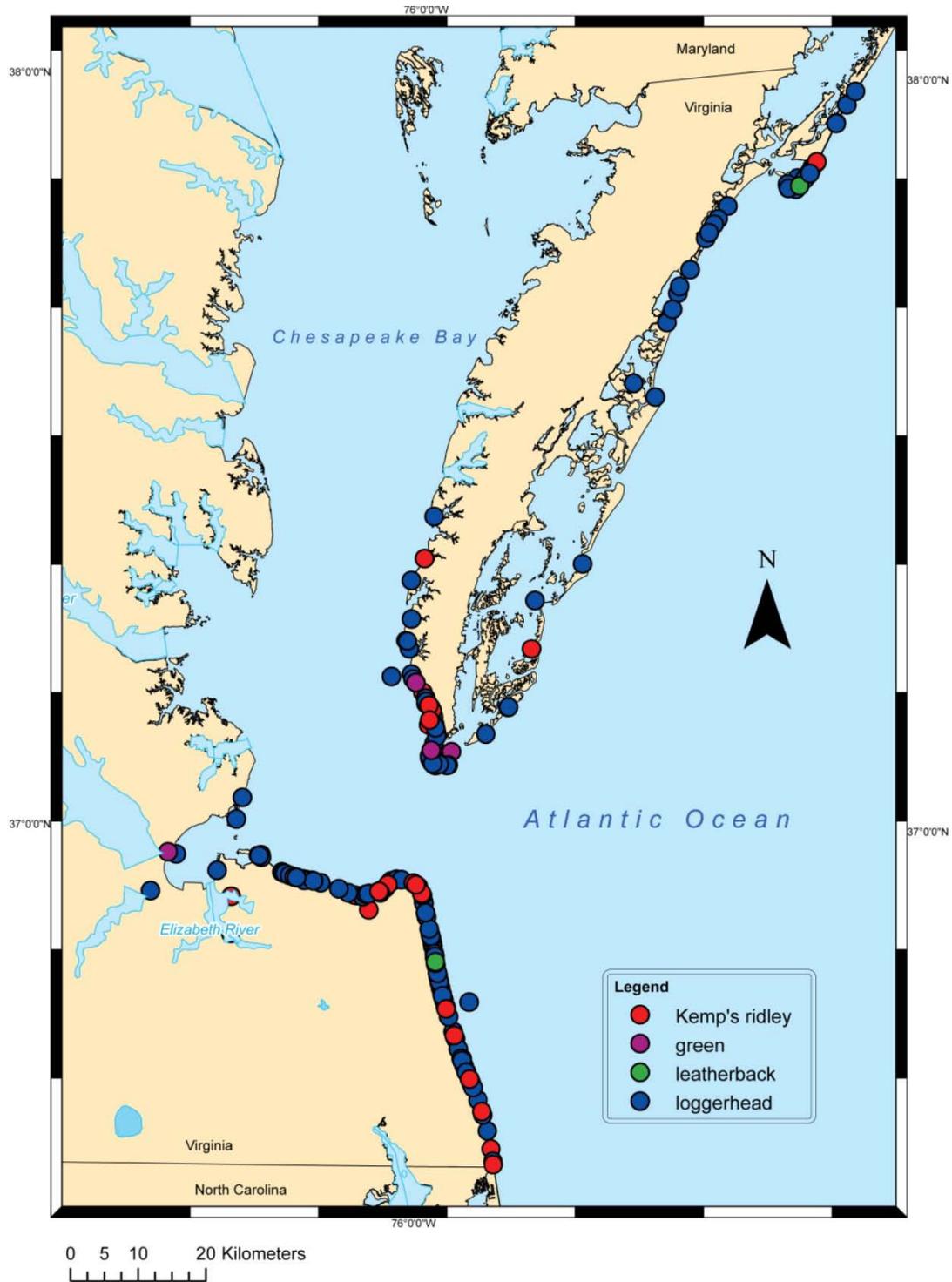
Five of the seven species of sea turtles existing in the world today occur in Virginia's coastal waters and all are on the endangered species list. They are loggerheads (the most commonly found in Virginia), green turtles, Kemp's ridleys, leatherbacks, and an infrequent hawksbill.

Sea turtles still have high levels of mortality. The number of mortalities caused by commercial fishing gear is down because of regulations put in place by NOAA Fisheries. To stop turtles from getting tangled, modified leaders on fixed pound nets and turtle excluder devices in mobile trawl gear are now required. Aside from fishing nets, sea turtles also face threats from ingesting balloons and other floating marine debris, from boat collisions, and the loss of sea grass habitat.

According to the Virginia Aquarium which operates the Virginia Marine Mammal and Sea Turtle Stranding Response Program, “Marine mammal and sea turtle strandings in Virginia were again at high levels during 2009. These remain some of the highest levels per mile of coastline for any state in the country.” In 2005 there were 168 strandings, in 2006 166, in 2007 177, in 2008 238, and in 2009 227 (graph below).



Yearly frequency of sea turtles strandings, 2000-2009. Note: These data do not include information from VIMS, which handles and records strandings from about 15% of Virginia' coastline.



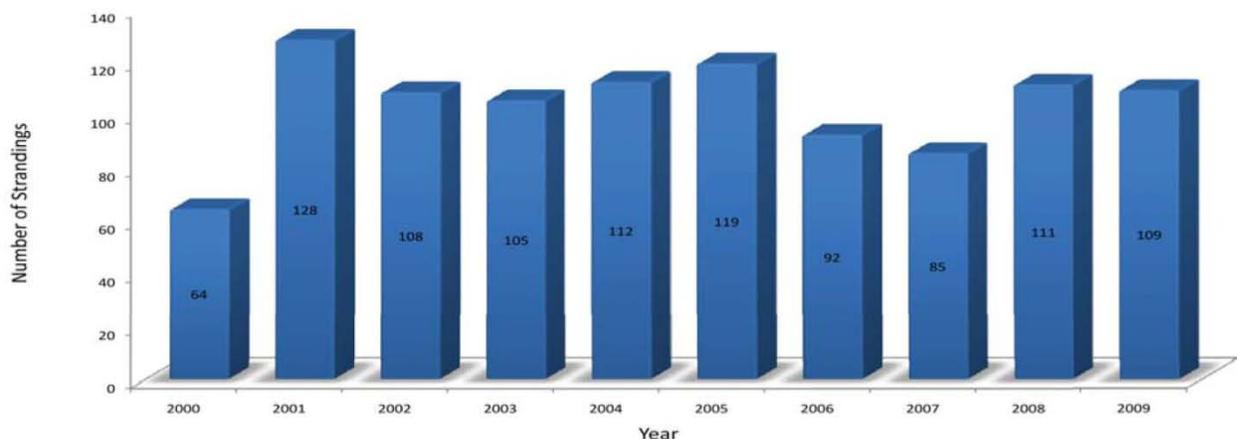
Spatial distribution of sea turtle strandings recorded by the Virginia Aquarium & Marine Science Center Foundation Stranding Response Program in 2009. Note: These data do not include information from VIMS, which handles and records strandings from about 15% of Virginia's coastline.

Marine Mammals

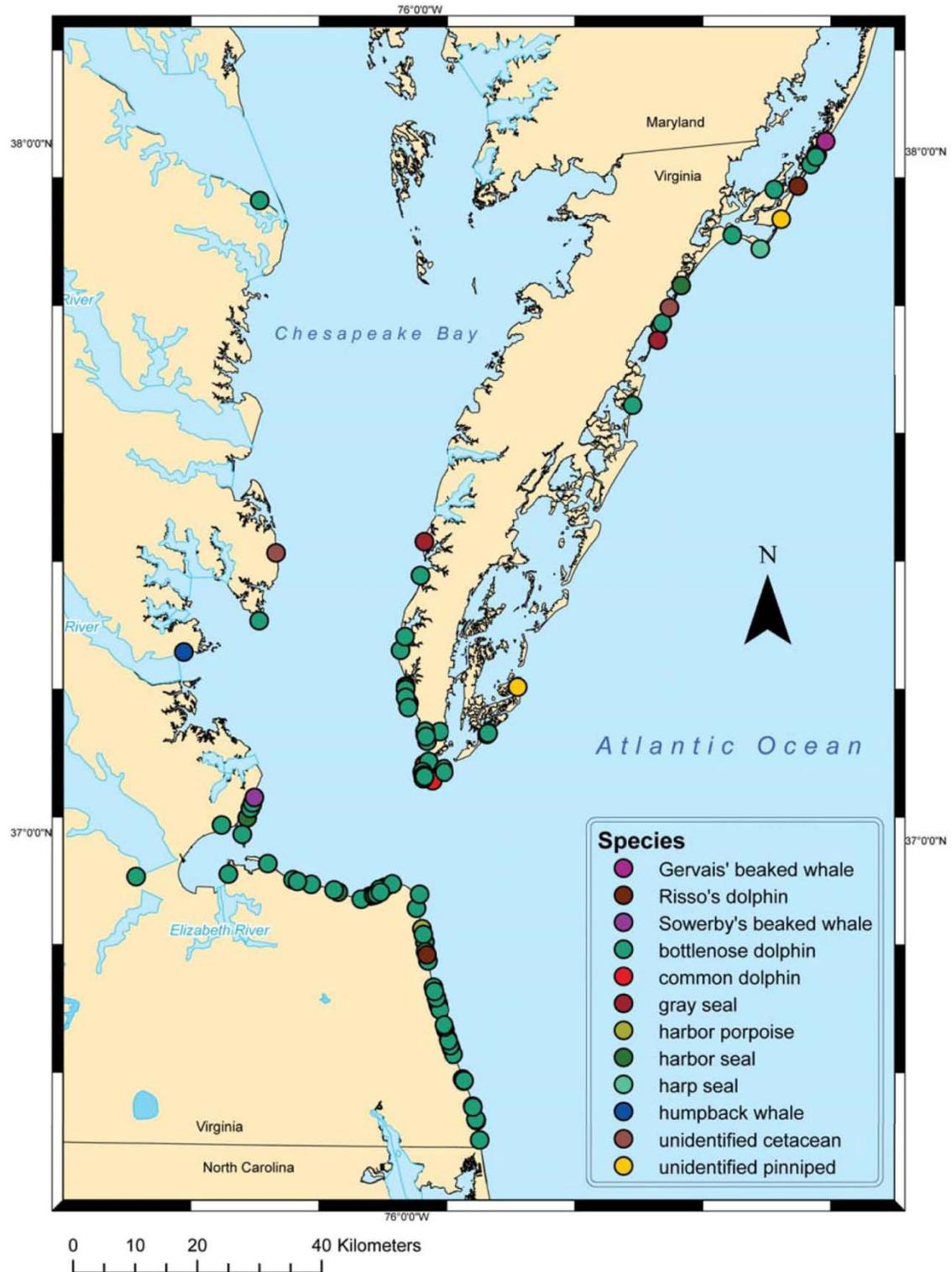
Commercial fishing presents a number of threats to marine mammals: Manatees and large whales are susceptible to vessel strikes and entanglement in nets and buoys lines; seals and smaller cetaceans like dolphins can become entangled in gill nets and discarded fishing line, and through depredation of baited hooks. In order to help mitigate these threats, Take Reduction Teams (TRTs) were established to bring stakeholders together to find ways to lessen the negative impacts of commercial fisheries on marine mammals and sea turtles. TRTs currently in the Marine Mammal Take Reduction Program include: the Atlantic Large Whale TRT, Atlantic Offshore Cetacean TRT, Atlantic Trawl Gear TRT, Bottlenose Dolphin TRT, False Killer Whale TRT, Gulf of Maine Harbor Porpoise TRT, Mid-Atlantic Harbor Porpoise TRT, Mid-Atlantic TRT, Pacific Offshore Cetacean TRT, and Pelagic Longline TRT. These teams meet to discuss gear modifications and fishing practices, and to create Take Reductions Plans, containing specific recommendations.

Another significant change since 2005 is the creation of a speed limitation on shipping traffic, the first of its kind. In 2008, the National Marine Fisheries Service (NMFS) established regulations to implement speed restrictions of no more than 10 knots applying to all vessels 65 ft (19.8 m) or greater in overall length in certain locations and at certain times of the year along the east coast of the U.S. Atlantic seaboard. This speed restriction is intended to prevent collisions with the endangered North Atlantic right whale, of which only 300-400 remain. In Virginia, the restriction is active from December to March 20 miles outside the mouth of the Chesapeake Bay. Measuring effectiveness has been difficult, because it appears that many ships are ignoring the speed restriction.

According to the Virginia Aquarium, which operates the Virginia Marine Mammal and Sea Turtle Stranding Response Program, “Marine mammal and sea turtle strandings in Virginia were again at high levels during 2009. These remain some of the highest levels per mile of coastline for any state in the country.” In 2005 there were 119 strandings, in 2006 92, in 2007 85, in 2008 111, and in 2009 109.



Yearly frequency of marine mammal strandings, 2000-2009. Note: These data do not include information from VIMS, which handles and records strandings from about 15% of Virginia's coastline.



Spatial distribution of marine mammal strandings recorded by the Virginia Aquarium & Marine Science

Center Foundation Stranding Response Program in 2009. Note: These data do not include information from VIMS, which handles and records strandings from about 15% of Virginia' coastline.

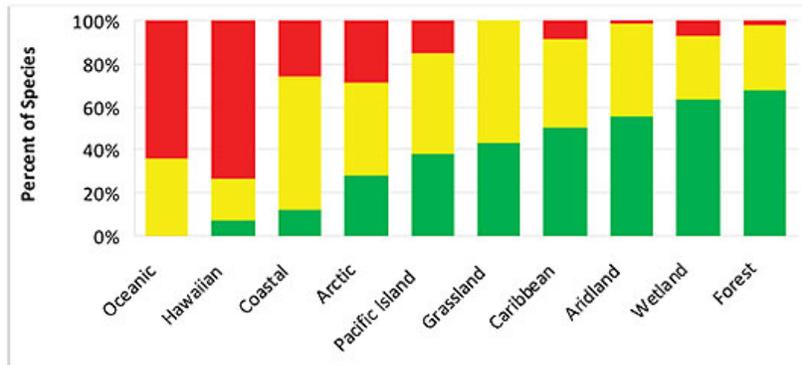
Migratory Birds

Virginia's coast is hemispherically important for migratory shorebirds, waterbirds, songbirds and raptors. Fortunately some of the most important migration corridors and stopover habitats are in conservation ownership. The Nature Conservancy (TNC) owns all or part of 14 of the 18 barrier islands off of Virginia's Eastern Shore, the others are owned by state and federal government agencies. Virginia's Eastern Shore hosts over 250 species of birds throughout the year, including raptors, songbirds, and pelagic birds. Uses in areas outside the conserved lands can present conflicts, such as incompatible agricultural practices and development, incompatible recreation, overfishing, and invasive species. The Virginia CZM Program and others have funded many studies by TNC and The Center for Conservation Biology at the College of William and Mary (CCB) on migratory patterns to help better identify critical stopover locations needed by birds. Studies have shown that Virginia's Eastern Shore is heavily used by migratory birds that migrate as far as Central and South America and the Arctic.

Tracking and studies done by CCB and TNC have uncovered some surprising data about whimbrels. During spring migration, whimbrels congregate in dense gatherings in the barrier island lagoon system of the lower Delmarva Peninsula to feed on fiddler crabs to build up energy reserves before migrating to their breeding grounds. Previously, it had been assumed that whimbrels from the Delmarva Peninsula flew only to the Hudson Bay; tracking revealed that they travel much further. For example, research conducted by the CCB in 2008 uncovered a previously unknown and unexpected migratory route when a whimbrel was recorded flying to Alaska and back.

The red knot is an important species that has been declining in recent years. Since the late 1980s, red knot populations have declined by approximately 90%, which has led to an application to the US Fish and Wildlife Service for fast track consideration for federal listing under the Endangered Species Act. The Delaware Bay is an important stopover for red knots, where they rely on horseshoe crab eggs for food. However, egg density is declining, leading to higher mortality in adult red knots. Surveys conducted by the CCB and TNC from 2005-2008 have shown that the Virginia Barrier Islands are more important to the species' survival than previously realized. Here, red knots do not eat horseshoe crab eggs, raising questions about red knot conservation efforts. Red knots are also the prey of peregrine falcons, which puts additional pressure on their population.

Relative Vulnerability of U.S. Bird Species by Habitat



Red=high vulnerability Yellow=medium vulnerability Green=low vulnerability

Source: <http://www.stateofthebirds.org/summary>

Bird Species Vulnerability

Many of the coastal species that show medium or high vulnerability to climate change are coastal seabirds. These species are vulnerable to climate change because they rely on marine food webs and because they have low reproductive potential. Beach-nesting Black and American oystercatchers and specialized Saltmarsh sparrows are among the most vulnerable coastal birds because they rely heavily on limited, low-elevation coastal habitats. Virginia's coast is particularly important for American oystercatchers and Saltmarsh sparrows.

Oil and Gas

In 2005, the Virginia General Assembly ordered a study on the possibility of offshore exploration for natural gas. The report from this study was released in January 2006. Later in 2006, the Virginia General Assembly stated its policy toward offshore natural gas exploration for the first time in Title 67-300 of the Code of Virginia, which supports offshore exploration for gas in areas further than 50 miles from the coast. In 2008, the federal moratoria on new offshore oil and gas development were lifted. An area off Virginia's coast is the only proposed location in the Atlantic for oil and gas development under the 2007-2012 Outer Continental Shelf Leasing Program. For more details on oil and gas, see the *Energy and Government Facility Siting* section.

Sand

Sand resources may become more and more valuable as sea level rises and the demand for beach renourishment increases. When siting wind farms, it will be important to determine the compatibility of extracting sand resources in the vicinity of offshore wind farms.

Management Characterization

Purpose: To determine the effectiveness of management efforts to address those problems described in the above section for the enhancement objective.

- 1. For each of the management categories below, indicate if the approach is employed by the state or territory and if significant changes have occurred since the last assessment: Intra-governmental coordination mechanisms for Ocean management**

Management categories	Employed by state/territory (Y or N)	Significant changes since last assessment (Y or N)
Comprehensive ocean management plan or system of Marine Protected Areas	Y	Although Virginia has no comprehensive state ocean management plan, the Virginia CZM Program nominated sites for inclusion in the National System of Marine Protected Areas and seven were approved for inclusion. These are the blue crab sanctuary, 4 waterfront Natural Area Preserves and 3 waterfront State Parks
Regional comprehensive ocean management program	Y	Virginia joined MD, DE, NJ and NY to form the new Mid-Atlantic Regional Council on the Ocean. The five governors agreed to action items dealing with habitat protection, renewable offshore energy, climate change and water quality
Regional sediment or dredge material management plan	N	N
Intra-governmental coordination mechanisms for Ocean management	Y	The Mid-Atlantic Regional Council on the Ocean established 6/2009

Single-purpose statutes related to ocean resources	Y	Restrictions on Horseshoe crab harvest, establishment of Menhaden harvest cap, limitation on ship speeds
Comprehensive ocean management statute	N	
Ocean resource mapping or information system	Y	Work is just beginning to add ocean resource data layers to Virginia CZM's Coastal GEMS internet mapping system and in 2009 Virginia CZM funded The Nature Conservancy to produce a map of Mid-Atlantic "ecological Marine Units"
Ocean habitat research, assessment, or monitoring programs	Y	NEAMAP and Ecosystem-based management, Take Reduction Plans and monitoring
Public education and outreach efforts	Y	MARCO website, Virginia CZM website and magazine, VMRC citizen advisory committees

Intra-governmental coordination mechanisms for Ocean management

MARCO

The Mid-Atlantic Regional Council on the Ocean brought together governors from New Jersey, New York, Delaware, Maryland, and Virginia in June 2009 to coordinate state action on coastal issues. Four categories of action were identified, with specific objectives identified for each:

Habitat protection: 1) Protect the region's major offshore canyons from harmful or damaging activities. 2) Identify other key Mid-Atlantic habitats and migratory pathways at risk from harmful or damaging activities and seek appropriate protection measures. 3) Create a regional internet mapping system to identify for decision-makers those areas which may be ecologically compatible or incompatible with certain activities due to the presence of key habitats. 4) Create Mid-Atlantic marine habitat protection and restoration policies to guide the management of key priority habitats and habitat types.

Offshore renewable energy: 1) Develop and finalize shared research and monitoring protocols for assessing the construction and operations impacts of energy development on ocean and coastal resources, and identify appropriate opportunities for integration into permitting conditions. 2) Define regulatory steps, time frames, and potential barriers to the development of the region's offshore renewable energy resources and identify appropriate coordinating measures. 3) Complete a comprehensive offshore use map and decision-support tool to facilitate siting of renewable energy projects to minimize adverse impacts to other ocean users and ecological communities.

Climate change: 1) Identify key infrastructure that is vulnerable to sea level rise and increased flood hazards at a coarse scale. 2) Acquire the data needed to assess regional vulnerability to climate change and sea level rise impacts to infrastructure and coastal habitats. 3) Create a regional/national GIS server to store and deliver the data needed to plan/make decisions. 4) Facilitate information exchange regarding infrastructure vulnerability and coastal habitat and shoreline management. 5) Initiate sea level rise adaptation measures to collectively reduce the region's vulnerability to climate change and sea level rise.

Water quality: 1) Promote greater and smarter federal investments for infrastructure upgrades to region's wastewater treatment infrastructure. 2) Reduce the amount of human-derived debris and floatables that enter waterways and the ocean. 3) Improve delivery and expand data collected on water quality to better predict impairments and assess the effectiveness of efforts to improve water quality. 4) Develop an agenda to address atmospheric sources of nitrogen and toxins that contaminate the region's marine waters.

Bi-state Fishery Management Plans

Virginia and Maryland have collaborated on fishery management plans for blue crab, striped bass, summer flounder, and bluefish. Virginia has also cooperated with Maryland on oyster issues, including an Environmental Impact Statement to look at the introduction of a nonnative species of oyster. The EIS prepared by the US Army Corps of Engineers concluded that nonnative oysters should not be introduced.

Single purpose statutes related to Ocean resources

Magnuson-Stevens Reauthorization Act of 2006

The reauthorization created new requirements for fisheries managers. Catch limits are now set by councils and scientific committees, whereas before councils would set quotas using the best available science. Scientific committees are now much more central to the decision-making process. Accepted Biological Catch numbers cannot be exceeded.

Menhaden harvest cap

Most rules concerning fisheries come from regulations, not laws, but legislation was employed to put a harvest cap on Menhaden in 2006, due to expire 2010.

Ocean habitat research, assessment, or monitoring programs

Northeast Monitoring and Assessment Program (NEAMAP)

NEAMAP grew out of an Atlantic States Marine Fisheries Commission resolution in October 1997 to begin development of a coordinated fisheries-independent sampling program in the Northeast region. The initial focus of NEAMAP is on nearshore trawl surveys, which provide important information for the completion of more accurate stock assessments. There are currently several states that conduct long-term trawl surveys in nearshore areas, and the National Marine Fisheries Service conducts a bottom trawl survey in federal waters. However, there are sampling gaps in Atlantic waters. Current NEAMAP projects focus on filling gaps in trawl survey coverage and facilitating the exchange of information through the Trawl Swap Program.

Improvements in the collection of fisheries-independent data and linkage of these data to fisheries dependent data will provide long-term improvements in Atlantic coast fisheries management. NEAMAP is working to help coordinate and disseminate partners' fisheries-independent data as well as to develop a plan for collecting new data through the NEAMAP program.

Ecosystem Based Fisheries Management

Chesapeake Bay managers, supported by Maryland Sea Grant, are exploring the development of Ecosystem Based Fisheries Management Plans for five species (Menhaden, American Shad, Blue Crabs, Striped Bass, and Eastern Oysters), a shift away from the long-used single species management plans. Begun in 2009, the project will create issue briefs on topics pertinent to each species by early 2010, which will form the basis of their management recommendations.

Ocean resource mapping or information systems

“Ecological Marine Units”: Benthic Habitat Classification System

The Nature Conservancy has undertaken a two-year project to establish a publicly available baseline of marine spatial data that includes geophysical, biological and some human use information. A new benthic habitat classification system that integrates biological and physical data to define “ecological marine units” was created with funding assistance from the Virginia CZM Program. Additionally, with CZM funding, TNC produced maps showing important areas of particular relevance to Virginia for eight species.

MARCO Online GIS mapping portal

Virginia CZM initiated and is funding a project with MARCO and The Nature Conservancy to create an internet mapping system (based on Coastal GEMS) which can display ocean data layers for the entire Mid-Atlantic. Enhanced access to marine data and eventually decision support tools, will inform regional scale marine spatial planning and provide a framework to support ecosystem-based management approaches.

Commercial harvest monitoring systems

Fishermen are required by law to report catches, including information on what they caught and when, the fishing gear used, and the number of people in their crew. This information goes into a database which can be used to spatially map recreational and commercial catches. It is used to track the status of populations, and evaluate the effectiveness of management measures. To ensure accurate reporting, the database is complemented by an extensive auditing system. Fishermen keep their own extensive records. Buyers are required to keep records. Combined with law enforcement reports, 85% of harvests are accounted for.

Public education and outreach efforts

MARCO website

The Mid-Atlantic Regional Council on the Ocean established a website in June 2009 in conjunction with the signing of the Mid-Atlantic Governors' Ocean Conservation Agreement. There was also a press event as part of the June Summit. The website is hosted by the New Jersey CZM Program and can be viewed at: www.midatlanticocean.org .

Virginia CZM website and magazine

The Virginia CZM Program also hosts a website with MARCO information which can be viewed at <http://www.deq.virginia.gov/coastal/ocean.htm> . A 2010 edition of the Virginia CZM magazine will contain an article on ocean issues.

VMRC citizen advisory committees

VMRC has many citizen advisory committees, which engage in public outreach when changes to fisheries management plans are made. There are committees for oysters, clams, finfish, and blue crabs, and are each made up of about 20 recreational and commercial fishermen.

Other

Non-binding technical advice on LAPs (Limited Access Programs)

NOAA issued a technical memorandum on LAPs in 2007. LAPs confer privileges to an individual, community, or region to catch a set amount of fish.

Minerals Management Service Taskforce

Significant changes are taking place in identifying areas in state and federal waters for offshore wind resource areas, and this could have multiple impacts on ocean resources. Recently MMS established a task force of local, state and federal officials to identify issues with wind development in federal waters off Virginia Beach.

2. For management categories with significant changes since the last assessment provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference rather than duplicate the information.
- a) Characterize significant changes since the last assessment;
 - b) Specify if it was a 309 or other CZM-driven change (specify funding source) or if it was driven by non-CZM efforts;
 - c) Characterize the outcomes and effectiveness of the changes.

The most significant change affecting ocean resources has been the creation of MARCO. This is a CZM-driven change. Although MARCO is relatively new (created in 2009), the organization has already held a summit with representatives of the governors from all of the participating states, where the Ocean Conservation Agreement was signed. This agreement outlined goals and objectives to be formulated into an action plan with deadlines. A stakeholder workshop was held in December 2009. MARCO Management Board meetings were held in May 2010 and August 2010. The August meeting included a day of meetings with federal agency representatives including NOAA, EPA, USFWS, USGS, Coast Guard and ACOE. It is still too early to judge the effectiveness of the creation of MARCO.

Descriptions of other changes are also included in the table above.

Priority Needs and Information Gaps

Using the table below, identify major gaps or needs (regulatory, policy, data, training, capacity, communication and outreach) in addressing each of the enhancement area objectives that could be addressed through the CMP and partners.

Gap or need Description	Type of gap or need (regulatory, policy, data, training, capacity, communication & outreach)	Level of priority (H, M, L)
Lack of habitat/biological data, leading to an incomplete knowledge of ocean habitats (including canyons, corals, sand shoals and migration corridors for marine mammals, sea turtles and birds) and what level of human uses are compatible with their protection. These types of data layers need to be added into the state’s Coastal GEMS portal and the new MARCO regional portal.	Data	H
Lack of human use data, leading to an incomplete knowledge of favored fishing locations, boat traffic patterns and other uses and whether or not these uses are compatible with habitat protection and energy development. These types of data layers need to be added	Data	H

into the state's Coastal GEMS portal and the new MARCO regional portal.		
Need to engage in comprehensive marine spatial planning that allows an ecosystem-based management approach to accommodating various future uses such as energy production, conservation, recreation, shipping, military activities, etc.	Data, communication and outreach, policy	H
Need staff to assist with new MARCO efforts	Capacity	H
Need to complete a comprehensive assessment and inventory for sand resources in Virginia. This could entail compiling sand resource assessments and data from the last 20+ years, and creating comprehensive GIS-compatible maps and data layers. This mapping information is needed for future planning of beach nourishment and other activities, including identifying past and future dredging areas. Need to identify the potential impacts from sand mining activities across the coastal zone.	Data, communication and outreach	M to H
Need to better understand and prepare for impacts of climate change on ocean resources, particularly ocean acidification	Data, regulatory, communication and policy	M

Enhancement Area Prioritization

1. What level of priority is the enhancement area for the coastal zone (including, but not limited to, CZMA funding)?

- High** ✓
- Medium**
- Low**

Briefly explain the level of priority given for this enhancement area.

The interagency Coastal Policy Team reviewed and ranked this issue at its February 17, 2010 meeting according to the following criteria: feasibility; importance and appropriateness. Up to 5 points were allotted to each of the three criteria so that a maximum score would be 15. Scores from 0-4.99 are considered low priority; 5-9.99 is medium priority and 10-15 is high priority. Ocean Resources received a score of 10.41.

2. Will the CZM Program develop one or more strategies for this enhancement area?

- Yes** ✓
- No**

Briefly explain why a strategy will or will not be developed for this enhancement area.

Ocean Resources reached a high priority status for the first time this year. This was largely driven by the Pew Oceans Commission and US Ocean Commission reports, the formation of the Mid-Atlantic Regional Council on the Ocean and most recently the July 2010 Executive Order containing the Final Framework for Coastal and Marine Spatial Planning. Given the state of the oceans and the increasing demand on them for new uses such as energy development, the time was deemed appropriate for a 5-year strategy on ocean resources.

<u>2000 Assessment</u>	<u>2005 Assessment</u>	<u>This Assessment (2010)</u>
High _____	High _____	High ✓ _____
Medium ✓ _____	Medium ✓ _____	Medium _____
Low _____	Low _____	Low _____