

MARINE SPECIES OF COMMON CONSERVATION CONCERN: PROTECTING SPECIES AT RISK ACROSS INTERNATIONAL BOUNDARIES

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SUMMARY

The Marine Species of Common Conservation Concern (MSCCC) Project, developed by the North American Commission for Environmental Cooperation (CEC), is an initiative to implement a North American cooperative agenda for the conservation of marine species that are in need of bi- or tri-national, multisectoral cooperative efforts. Within the larger context of the CEC, the MSCCC initiative seeks to compile a dynamic, living list of marine taxa in need of international conservation measures. To select the initial list of MSCCC, conservation representatives from the academic, governmental, and NGO communities of Canada, Mexico, and the U.S. developed a process that integrated the identification of each country's socio-political priorities, tri-national coarse- and fine-scale biological and conservation criteria, as well as an expert advisory review. Through this process, a total of sixteen priority species were selected. In essence, all sixteen are *charismatic* species—a trait that should help galvanize public attention and resources on efforts to conserve them. In addition, many are *umbrella* species, in that the effective conservation of any one of these species will actually result in the protection of a whole suite of species that share the same habitat. A few are also *keystone* species—in that they play a pivotal ecological role in maintaining the biodiversity and balance of the food web. The appropriate response to the threats affecting these sixteen MSCCC entails collaborative and multilateral actions requiring diverse conservation effort from a variety of sectors. A pivotal example of such coordinated approach involves the protection of the vast habitats of these far ranging MSCCC, an objective which may be most effectively achieved through the establishment of a system of marine protected area (MPAs) networks within North American waters. Creating such reserve networks is admittedly an ambitious goal—but one which may be essential to the conservation of North America's biotic resources and biodiversity.

1. INTRODUCTION

At one time, several thousands of right whales swam in the waters of the western North Atlantic. Today less than 300 right whales exist in these waters (1, 2, 3,). Considered the “right” whale to hunt due to the ease of its capture as well as value of its oil and baleen, whaling fleets of the 16th, 18th and 19th centuries almost brought the once abundant species to extinction—fewer than 100 whales are thought to have existed by the time international protection for the species came into effect in 1935 (1).

The right whale (*Eubalaena glacialis*), the hawksbill turtle (*Eretmochelys imbricata*), the sea otter (*Enhydra lutris*), and the short-tailed albatross (*Phoebastria albatrus*) are prime examples of the overexploitation of the marine environment resulting from the prevalent beliefs of the 18th and 19th century that the oceans provided an inexhaustible source of wealth, which humans could tap without consequence. Only two hundred years ago Lamarck wrote:

“Animals living in the waters, especially the sea waters are protected from the destruction of their species by Man. Their multiplication is so rapid and their means by evading pursuit or traps are so great that there is no likelihood of his being able to destroy the entire species of any of these animals.”(5)

The decline in the population abundance of many marine mammals, seabirds and marine turtles, and the collapse of numerous fish stocks have proven these 18th and 19th century paradigms wrong. At the beginning of the 21st century, a group of concerned stakeholders under the auspices of the Commission for Environmental Cooperation are determined to ensure the conservation of migratory and transboundary species in North American waters.

Migratory and transboundary species use or travel through a series of different habitats throughout North America, and, as result, are dependent on action or inaction of many different jurisdictions. The leatherback turtle (*Dermochelys coriacea*), a species undergoing a severe global decline (>70% in 15 years), is a prime example (6). This long-lived, slowly maturing animal nests on tropical beaches of both Mexico and the U.S., migrates through coastal waters of the Atlantic and the Caribbean, and feeds in nutrient rich waters of the Canadian temperate and subpolar continental shelves. Thus the large-scale migratory patterns and transboundary nature of leatherbacks—like many of the Marine Species of Common Conservation Concern (MSCCC)—require a coordinated, multilateral response, with every effort made to preserve the important breeding and feeding habitats of these species, as well as important movement corridors and staging areas along the migratory routes linking the breeding and foraging grounds.

Additionally, even when the range of a species is not shared by several nations, its conservation may be a matter of continental concern because of the importance of its status (e.g., endemic taxa), and due to the international nature of the threats and pressures exerted on the species—as is the case of the vaquita (*Phocoena sinus*, Gulf of California harbour porpoise). The vaquita, which inhabits the waters of the Upper Gulf of California (Mexico)—an ecosystem which has suffered from a reduction of freshwater input due to the diversions and dams of the Colorado River (U.S.), is threatened mainly by incidental mortality in fishing gear. Because of its endemic status and the bi-national pressures that threaten its existence, the vaquita is a species of importance and concern to all North Americans. Transboundary species that range across international borders, far ranging species which undertake large-scale migrations at the continental scale, and species found in one country but affected by actions in another all require regional approaches to management, conservation and recovery. Bi- and tri-national cooperative conservation efforts will help ensure that no link in the chain of needed conservation action is broken to imperil such species of continental significance.

The Marine Species of Common Conservation Concern project facilitates collaboration among governments, NGOs, marine conservation scientists, the private sector and others to identify, conserve, and monitor the conservation status of marine species, developing a long-term cooperative agenda for such continentally significant taxa. An important focus of this project is to provide a foundation for informed decision-making and subsequent action at all levels and in all sectors that affect the conservation of species of common interest to the three countries. The effort has also been used as one of the building blocks for the identification of priority conservation areas for the Baja California to Bering Sea Region (B2B region).

The CEC is ideally suited to foster MSCCC conservation in North America because it brings governments, NGOs, conservation scientists, members of the private sector and other stakeholders from

all three countries together to agree upon common frameworks and solutions spanning the political and ideological borders of North America—borders that migratory and transboundary species fail to recognize.

2. HOW THE SPECIES WERE CHOSEN

In May of 2001, the CEC convened a workshop in Monterey, California to initiate the identification of North American Marine Species of Common Conservation Concern (MSCCC)—one of several independent but related tasks under the NA MPA Network initiative. So as to obtain a more holistic approach to the initiative, workshop participants from a diverse array of backgrounds, sectors and regions of North America were invited to the meeting. During the workshop, taxonomists, conservationists, educators, managers, economists, and administrators from academic institutions, government agencies and non-governmental organizations of all three North American countries were given the task of identifying coarse-scale criteria and a process by which the MSCCC would be identified.

For this first pilot effort for the marine realm, two sets of coarse-scale criteria—compulsory and recommended—for evaluating the candidates of MSCCC were agreed upon in Monterey. The compulsory criteria focused the initiative towards species that were: 1) transboundary or migratory¹, and 2) at high risk of extinction, given their current status or trends, their inherent natural vulnerability and their susceptibility to anthropogenic threats. Using secondary or recommended criteria, priority would then be given to species: 1) deemed ecologically significant (e.g., umbrella, keystone, or indicator taxa); 2) officially listed as being of conservation concern by one of the three North American countries, by IUCN (the World Conservation Union), or by CITES (the Convention on International Trade in Endangered Species); 3) whose recovery or management was feasible, including re-establishment potential as well as the opportunity to strengthen management and learn from successes; and 4) which had a high potential for public engagement (flagship species).

Taking these criteria and recommendations into consideration, the trilateral advisory group, supported by taxonomic experts from the three nations, started to narrow down the criteria from which to choose the first pilot set of MSCCC. Although the group recognized the great importance of various marine species, including those that are commercially valuable, concerns were voiced that a prudent first step for this initiative would be to deal with species for which: 1) information was readily available, 2) there was great support from all three countries, 3) recovery action was not greatly complicated by economic factors, and 4) conservation action was not duplicated by other existing initiatives. Thus, the lists developed by the country teams focused on three taxonomic groups: marine mammals, sea birds and sea turtles.

The trilateral advisory group, supported and guided by country experts, then developed fine-scale criteria to numerically rank and filter the species using a taxonomically-blind approach. Identifying the final fine-scale criteria and the process used to rank the species was not an easy task and there was much debate. Country group leaders pondered over whether or not to include concepts such as keystone, umbrella and indicator species due to the lack of agreed definitions. Other difficulties concerning criteria (e.g., whether to use global and/or regional status; whether the IUCN listing or specific biological criteria such as small populations, biased sex-ratio etc. should be used; whether priority should be given to flagship species), and processes (e.g., whether the ranking should be across taxa (taxa-blind) or within taxa groups; whether the criteria should be normalized per tier or simply summed regardless of tier; whether or not the score the species obtained increased according to the number of threats the species experiences) were also greatly debated. In the end, the twelve criteria used covered the likelihood of loss, the severity of loss (biological and socio-economic), and the ability to mitigate that loss:

¹ Later expanded to include species that were affected by actions of two or more countries, and were not necessarily migratory or transboundary, such as the endemic vaquita.

1. **COSEWIC/NOM-059/ESA status:** denotes the official country listing (e.g., endangered, threatened), capturing the status of the species regionally, and also denotes government support and potential for collaborative trilateral work to protect them.
2. **Historic trend:** highlights species that have been decreasing in abundance over the last 10 to 20 years; also highlights species that have gone through a bottleneck and have not yet fully recovered.
3. **Projected threat:** highlights species that are decreasing in abundance or likely to experience a decline in the next 10 years; also highlights species that are subject to great pressure (including human induced sources of direct or indirect mortality, habitat degradation and loss).
4. **Endemic to North America:** flags species that are rarely found outside North American waters.
5. **Geographically vulnerable:** highlights species that are vulnerable due to the location and/or amount/range of important habitat (i.e. coastal species; species with calving, nesting, feeding areas, migration corridors in close proximity to human activity; species with restricted/limited areas for breeding, migrating, foraging).
6. **Global status from IUCN red list:** captures the global biological context for the establishment of conservation priorities at the local level, acknowledging that extirpation from North America is more serious for a species that is already globally imperiled.
7. **Umbrella species:** flags species whose conservation helps to conserve other species.
8. **Significance to indigenous groups:** highlights species that are important components of cultural integrity of indigenous peoples.
9. **Economic value:** captures the importance of the species in economic terms from several perspectives, including importance for consumptive (e.g., fishing) and non-consumptive (e.g., eco-tourism) activities, as well as economic implications (e.g., closures of fisheries due to bycatch of protected species)
10. **Socio-cultural value:** captures the interest by all citizens, including local groups (and as distinct from significance to indigenous groups), in protecting the species for future generations.
11. **CITES status:** as described in the appendix I, II or III of CITES, capturing species that have management action in terms of enforcement on trade of the species.
12. **Possibility for success:** denotes species whose conservation is feasible.

Criteria were grouped, and a non-normalized tiered, taxa-blind method² was chosen. For many of the criteria, scores would be different depending on the country lens used; therefore each national group ranked the list individually and scores were averaged. From this ranking, the top fifteen species were then selected as the first set of MSCCC.

² Criteria were grouped under four categories or tiers: 1) probability of losing the species, 2) species' biology, 3) socio-economic importance, and 4) opportunity for conservation. Individual criterion were weighted and given a maximum value. Where sufficient information existed, species were scored per criterion on a scale from 0 to the maximum value of the criterion. So as not to negatively influence species for which there was insufficient information for a given criterion, the criterion was omitted for that species and scores were adjusted to reflect the omission. Values were summarized per tier, and tier scores were added (but not normalized), and divided by the maximum possible score to obtain an overall risk index per country. Country risk indices were then averaged to get an overall score for North America.

The list was sent for review, and in a July meeting of CEC's expert marine advisors, the list was called into question due to the absence of the vaquita (*Phocoena sinus*)—one of the most endangered marine mammals in North America. Although the species is a country endemic, the advisors proposed that the list be revisited. Hence, the country leads went through the listing process once again, this time including the vaquita within the candidate species. They proposed that if the vaquita ranked above the last species included in the original list, it would be kept. If not, it would be considered for the next round of MSCCC. In the end, the species ranked within the original fifteen and was included as the sixteenth MSCCC. The following are the first list of species of the Marine Species of Common Conservation Concern:

<u>Scientific Name</u>	<u>Common Name</u>
<i>Dermochelys coriacea</i>	Leatherback Turtle
<i>Eretmochelys imbricata</i>	Hawksbill Turtle
<i>Lepidochelys kempii</i>	Kemp's Ridley Turtle
<i>Chelonia mydas agassizii</i>	East Pacific Green Turtle
<i>Caretta caretta</i>	Loggerhead Turtle
<i>Eubalaena glacialis</i> and <i>E. japonica</i>	Right Whale
<i>Eschrichtius robustus</i>	Gray Whale
<i>Megaptera novaeangliae</i>	Humpback Whale
<i>Orcinus orca</i>	Killer Whale
<i>Balaenoptera musculus</i>	Blue Whale
<i>Arctocephalus townsendi</i>	Guadalupe Fur Seal
<i>Enhydra lutris</i>	Sea Otter
<i>Phocoena sinus</i>	Vaquita
<i>Puffinus creatopus</i>	Pink-footed Shearwater
<i>Phoebastria albatrus</i>	Short-tailed Albatross
<i>Synthlibiramphus hypoleucus</i>	Xantus' Murrelet

It should be noted that many of the species that did not make the list the first time around are still of great concern to the countries, and will be kept in mind for future discussions. They have been noted and are listed as *Species to watch out for*.

3. HOW SPECIES CONTRIBUTE TO AN INTEGRATED ECOSYSTEM APPROACH

Species are the common currency of biodiversity, and they are its most identifiable elements. When we speak of loss of biodiversity, or even degradation of ecosystems, we are often referring to loss of a species or reduction in species abundance. Individual species can galvanize conservation, by putting a face to common conservation problems—issues that may otherwise go less or even unnoticed. Species issues touch the public, helping to garner greatly needed support for ocean conservation. Moreover, the MSCCC can help determine conservation priorities, by identifying common threats, key habitats, and potential solutions. Thus, the MSCCC serve as a useful target for allocating limited conservation resources.

Selection of the sixteen Marine Species of Common Conservation Concern is an important first step in the process of gathering key information to support future multilateral efforts to protect North America's biodiversity. The sixteen species identified here represent a wide range of taxa, subject to different levels of risk and with a wide geographic range. Five of the sixteen are sea turtles, eight are marine mammals (5 whales), and three are seabirds. In essence, all sixteen are charismatic species—a trait

that should help galvanize public attention and garner conservation resources. They are thus flagships for the North American marine environment at large.

In addition to being conspicuous symbols, many of the sixteen MSCCC are umbrella species, whereby their effective conservation will result in the protection of many other species that share the same habitat. In the case of highly migratory animals such as the leatherback turtle (*Dermochelys coriacea*), hawksbill turtle (*Eretmochelys imbricata*), loggerhead turtle (*Caretta caretta*), right whale (*Eubalaena glacialis*), gray whale (*Eschrichtius robustus*), pink-footed shearwater (*Puffinus creatopus*) and short-tailed albatross (*Phoebastria albatrus*), protection of the species means protection of a whole suite of linked habitats—and the myriad organisms they sustain.

A few of the species are also keystone species—i.e., they play a pivotal ecological role in maintaining the biodiversity and structure of the marine food web. This is most certainly true for the sea otter (*Enhydra lutris*)—the removal of which causes cascading effects that ultimately result in the loss of kelp forests and associated communities. The hawksbill turtle (*Eretmochelys imbricata*) also plays a keystone role—preventing the domination of the reef by fast-spreading sponges. For keystone species, the risk of extinction implies broader community-level consequences.

The appropriate response to the threats affecting every one of the sixteen Marine Species of Conservation Concern is a mix of collaborative actions including voluntary market mechanisms, regulatory reform regarding threats such as directed and incidental take, as well as education, scientific research, and protection of key habitats. Habitats of the MSCCC may be most effectively protected through the establishment of multiple use or no-take marine protected areas. Additionally, the list of species may well be of critical importance for the design of Marine Protected Area networks within North American waters (7). While some scientists have questioned the utility of single species for conservation planning, umbrella species like those on the MSCCC list may help integrate single-species conservation with broader ecosystem-level concerns. By identifying key habitats, such as breeding, feeding and nursery areas as well as migratory corridors and bottlenecks, MSCCC can provide the basis for selecting sites for protected area designations that address the conservation of rare or threatened migratory or transboundary species—pointing out and protecting habitat linkages across national borders. By identifying key habitats within different jurisdictional waters, MSCCC help us look at the conservation of marine systems as a whole, tying together protected area sites through ecological linkages such as migration and foraging.

Determining these key areas for MSCCC may help also to pinpoint critical processes and habitats (such as upwelling centres, shallow banks, and estuarine nursery areas) that may provide benefits to entire ecosystems over large spatial scales. Although MPAs are usually deemed pointless for migratory species which spend most of their time outside the protected areas boundaries, MPAs like terrestrial protected areas for migratory birds can be important tools for migratory species conservation. As fishers, scientists, and eco-tourists know, migratory species can be found in predictable yet vulnerable locations during certain periods of their life cycle—during calving/nesting, feeding, migratory corridors for example. If the main stresses—such as entanglement in fishing gear, ship collisions, and egg poaching—are removed during these critical periods, the chance for survival of the species will likely increase. Moreover, by protecting the integrity of these areas of key habitat from threats (such as beach development, invasive species, trawling of the sea floor) year round, other species that frequent these locations seasonally will also benefit. Additionally, once these key MSCCC habitats are set aside, the linkages between these areas could be protected by a series of “virtual corridors” of targeted policy reforms, designed to ensure the preservation of the ecological connectivity between most vital parts of the species range.

In addition to acting as the compass showing us where managers should focus limited conservation efforts, MSCCC can also act as biological barometers, indicating the status of the oceans and its inhabitants.

Most importantly, MSCCC help policy makers and scientists remove national-, institutional-, and sectoral-blinders, and aid resource managers to think beyond jurisdictional boundaries, and to work

collaboratively at a regional scale on common conservation priorities. Working collaboratively will help North American countries achieve more than each can do alone to conserve species and their common ocean habitats.

Although many years have passed since Lamarck's statement, marine species continue to be threatened with depletion and extinction. And what is perhaps more worrisome, to a large extent, our ignorance of the oceans prevails. Though the MSCCC are no longer targets of extensive commercial fisheries (which cannot be said of many other marine species), they remain subject to a multitude of other threats, such as habitat degradation and loss, collisions with ships, incidental catch in commercial fisheries, entanglement in fishing gear, toxic loading, point and non-point sources of pollution, ingestion of plastics, inbreeding, nutrition/food limitation, and disease, to name but a few. Threats to these marine species and others, which take place beneath the unchanging blanket of the ocean's surface, go on largely unnoticed. Consequently, issues surrounding their conservation are left largely unaddressed by decision makers and the general public.

Now that sixteen species of common concern for the Canada, Mexico and the U.S. have been identified, North American regional action plans involving collaborative and cooperative efforts can be developed and implemented, and ecological science can be harnessed to identify critical habitats for these species. These key sites can and should serve as a strong foundation for a system of MPA networks for North America. Creating such networks is admittedly an ambitious goal—but one which will greatly benefit the conservation of North America's wonderful marine biodiversity.

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