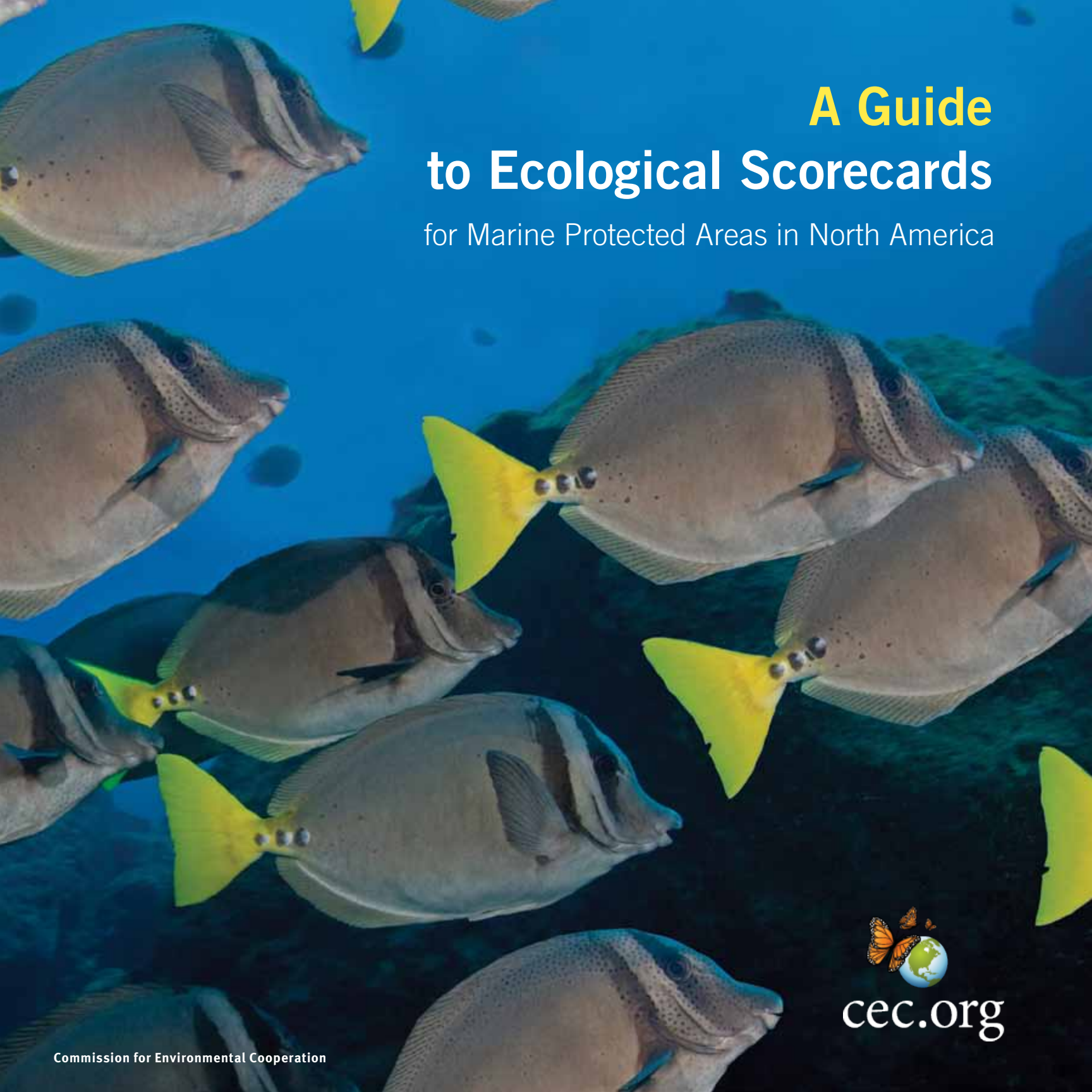

A Guide to Ecological Scorecards

for Marine Protected Areas in North America

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Commission for Environmental Cooperation

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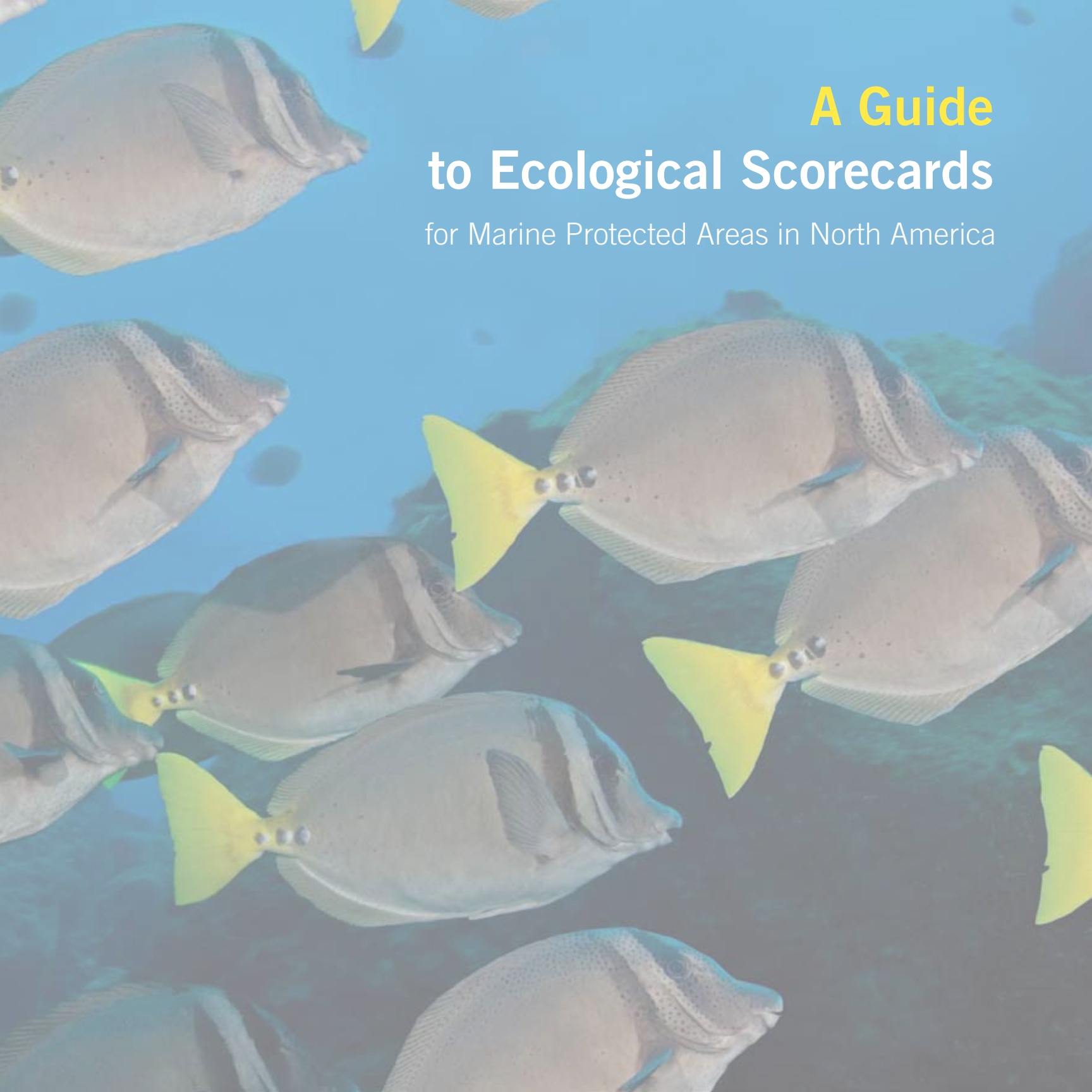

A Guide to Ecological Scorecards

for Marine Protected Areas in North America

Photo: Patricio Robles Gil

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Photo: Patricio Robles Gil

INTRODUCTION

This guide is an introduction to the use of marine ecological scorecards and condition reports, which are tools for assessing the condition of marine protected areas in North America. Marine protected areas (MPAs) are managed marine and coastal areas of ecological significance, featuring species and/or properties which require special consideration. Managing these areas effectively helps conserve marine biodiversity in critical marine habitats.

To describe the condition of any North American MPA, a standardized marine ecological scorecard and a standardized condition report have been developed. The ecological scorecard provides a visual summary of the status of, and trends in, water, habitat, and living resources within the MPA, and the condition report provides a written summary of this information. These tools are intended to be used to understand and respond to changes at the MPA level.

Under the auspices of the North American Marine Protected Areas Network (NAMPAN), MPA managers and other relevant experts developed a series of questions for the ecological scorecards, to assess resource condition and trends in the various North American MPAs. These questions, presented and explained in detail in Section 2, are derived from a generalized ecosystem framework adopted by the NAMPAN experts. They are widely applicable across North America and provide a tool with which the system can measure its progress toward maintaining and improving natural quality.

The visual and written scorecards and condition reports serve as a tool for managers of individual MPA sites, resource managers, researchers and MPA constituents. They also help summarize information for policy makers, educators and outreach officers. In addition, the process of developing the ecological scorecard and corresponding condition report provides communication opportunities, both among MPA managers and experts and between MPA managers and the public, that may be as useful as the reports themselves. Lastly, the scorecards and condition reports distill large amounts of complex technical, traditional, and local ecological information into concise, easily understood assessments, which can be easily displayed in printed and electronic formats for a wide audience.

It is hoped that this tool and the process will contribute to the betterment of science- and evidence-based ocean stewardship, increase civic engagement in MPA management, and expand North Americans' understanding of ecosystem health. This in turn should further improve regional- and continental-scale conservation strategies and foster systematic environmental monitoring.

This document is divided into five sections:

- A general overview of the process.
- The scorecard questions in detail.
- The process of completing the scorecard.
- Considerations in carrying out a scorecard and condition report for an MPA.
- Three examples of scorecards from across North America.

Photo: NOAA

SECTION 1
AN OVERVIEW OF MARINE ECOLOGICAL SCORECARDS AND CONDITION REPORTS

In 2007, the North American Marine Protected Areas Network (NAMPAN) experts, with support from the Commission for Environmental Cooperation (CEC), agreed to conduct a pilot project to develop ecological scorecards and condition reports for North American MPAs. The three North American countries selected the Baja California to Bering Sea Region (B2B) for this joint marine conservation initiative, as it connects the marine realms of the three countries and offers tangible opportunities for collaboration.

Within the B2B, ten MPAs were initally selected: three in the Columbian Pacific ecoregion, four in the Southern Californian Pacific ecoregion, and three in the Gulf of California ecoregion. (For detailed information on these areas, please visit CEC's website at www.cec.org/nampan). These MPAs, although representative of the B2B Region geographically, do not necessarily represent the condition of the entire region, because of their special protected status. They do, however, provide the opportunity to develop and test the scorecard process.

Table 1 The 10 pilot MPAs

Ecoregion	Marine Protected Area
Columbian Pacific	Pacific Rim National Park Reserve
Columbian Pacific	Race Rocks Ecological Reserve and Marine Protected Area
Columbian Pacific	South Slough National Estuarine Research Reserve
Southern Californian Pacific	California Channel Islands
Southern Californian Pacific	Tijuana River National Estuarine Research Reserve
Southern Californian Pacific	Isla Guadalupe Biosphere Reserve
Southern Californian Pacific	El Vizcaino Biosphere Reserve
Gulf of California	Bahia de Loreto National Park
Gulf of California	San Pedro Martír Island Biosphere Reserve
Gulf of California	Alto Golfo de California y Delta del Río Colorado Biosphere Reserve

The Development of Marine Ecological Scorecards and Condition Reports

The scorecard approach presented here was adapted for North America from the "System-Wide Monitoring" approach (SWiM), used by the National Oceanic and Atmospheric Administration (NOAA) for US Marine Sanctuaries (online: http://sanctuaries.noaa.gov/science/condition/welcome.html). Its design was influenced by ecological scorecards prepared in the Chesapeake Bay and San Francisco Bay ecosystems, and by the input of expert participants from workshops in the B2B region.

This approach has two principal characteristics:

1. It is based on an ecosystem framework which can be adapted to any marine protected area, and can serve as the basis for the design of monitoring programs and for reporting information.
2. It allows for a flexible design, with a set of steps to create or improve a reporting program for a site, for a group of sites, or even for specific types of natural resources (such as marine mammals) or issues (such as marine reserve effectiveness).

The ecological scorecard and condition report are designed around a fixed set of questions with a subset of key indicators (see next Section for detailed questions). These indicators accommodate the broad needs of reporting at the site level, as well as across national boundaries. The process is meant to integrate a "bottom-up" monitoring design with the need for a "top-down" reporting structure, to enhance linkages across the broad scale of reporting that the countries (Canada, Mexico and the United States) wish to achieve. These tools allow for results to be organized in a consistent manner, which in turn allows MPA staff to use the results for more effective management.

Marine protected areas serve as important environmental benchmarks for broader coastal and marine ecosystems. Monitoring and reporting on change at individual MPAs, when using a consistent framework, allows conclusions to be drawn about a number of MPAs in an ecoregion. This provides opportunities to inform broader decisions and to give a broader perspective on the state of ocean health. *Nonetheless, such conclusions need to be treated with caution, as monitoring efforts in MPAs are similar but seldom identical, each site presenting ecologically distinctive features.* **The net result is that data from individual sites are not necessarily directly comparable with those from other sites.**

The individual nature of each MPA was hightlighted during the development of this approach in a series of workshops held by the CEC with the NAMPAN experts. The experts identified two main types of diversity that could vary among sites, and needed to be considered:

1 Natural diversity: Ecosystem components, including species, communities and habitats, that vary among and within different geographic areas.
2 Cultural diversity: The cultural value of different components at a site and the varying ways people draw on them to meet different needs, often managing them for different outcomes.

Local MPA managers frequently focus on the site-specific issues that most reflect local cultural values, choosing which ecological elements to monitor accordingly, and thus fail to take the larger ecological context into account.

Having a standardized approach across the North American continent serves to link site-based MPA management to large-scale questions and to other MPAs across national boundaries (see box below). The individual nature of a specific MPA does not diminish the importance of using a standardized reporting framework, like the ecological scorecards and condition reports, in that using a comparable approach allows comparable information about each MPA to inform site-level management decisions and allows similar stories to be told about each MPA, which in turn help inform broader manageemnt and policy decisions.

Benefits of the Ecological Scorecard and Condition Report Approach

- Helps to raise the profile of existing monitoring efforts
- Links large-scale questions with site-based management
- May help to identify knowledge gaps, research opportunities and shared approaches
- Makes complex information easy to understand
- Can serve as an effective communication tool with the public and decision makers
- Provides a consistent method for reporting on the health of MPAs across boundaries

Definitions

Establishing a standard baseline for assessments of conditions and trends is essential for a consistent, continental-scale evaluation framework. For the purposes of this approach, the **baseline** is defined as the most pristine condition for a site that can be identified and supported by scientific or other evidence. A secondary comparison standard could be the conditions that existed at the time the MPA was first given special protection. This secondary benchmark could be used to evaluate progress toward rebuilding site integrity, but should not replace the longer view of the baseline. The baseline standard should be kept in mind as the process is conducted.

A **marine ecological scorecard** is a visual tool that summarizes the condition of three key elements—**water, habitat** and **living resources** (see Table 2). Ecological scorecards are based on 12 standard questions relating to these elements. The detailed questions are presented in Section 2.

Two kinds of ratings are used to address each of these questions, one concerning present condition and one concerning estimated trends.

The first uses a five-point color-coded index to describe the current status (or state) of the site –its present condition– and scores that **condition** based on a rating scale from *critical* (worst it could be) to *superior* (best it could be), or *undetermined*, if no judgment is possible (see Figure 1). The other rating scale describes recent **trends** in conditions, using a five-point scale, ranging from *rapidly improving* to *rapidly degrading* (likely to reach a different state in five years) and *stable* (unlikely to change beyond normal variation), or *undetermined*, if the information is not sufficient to allow an assessment. Trend directions are represented by symbols (see Table 3). Informed by the data collected and other evidence available, including consideration of the site's baseline, the ratings represent the consensus of the experts conducting the scorecard process.

Table 2 Questions for Marine Ecological Scorecards

Water	1 To what extent do human activities influence water quality and inputs, and how are they changing?
	2 To what extent do altered nutrient loads affect ecosystem health, and how are they changing?
	3 To what extent do water conditions pose risks to human health, and how are they changing?
Habitat	4 To what extent do human activities influence habitat extent and quality, and how are they changing?
	5 To what extent do contaminants in habitats or the food web affect living resources or water quality, and how are they changing?
	6 To what extent does habitat alteration, including the extent and distribution of major habitat types, affect ecosystem health, and how is it changing?
Living Resources	7 To what extent do human activities influence living resource quality, and how are they changing?
	8 What is the status of biodiversity, and how is it changing?
	9 What is the status of extracted species, and how is it changing?
	10 What is the status and condition of key species, and how are they changing?
	11 What is the status and condition of species at risk, and how are they changing?
	12 What is the status of alien species, and how is it changing?

Figure 1 Color Gradient for Rating Current Ecological Condition on a Five-point Scale

Table 3 Standardized Statements for Characterizing Trends

Statement	Score
Conditions appear to be changing at a rate that will lead to an improved state within five years.	**Rapidly improving**
Conditions are improving.	**Improving**
Within the bounds of normal variation, no consistent changes are anticipated from either anthropogenic or other sources.	**Stable**
Conditions are degrading.	**Degraging**
Conditions appear to be changing at a rate that will lead to a degraded state within five years.	**Rapidly degrading**
There is insufficient information to establish a basis for the trend, or data are highly variable and trends cannot be distinguished.	**Undetermined**

A **condition report** is a written summary of the current status of ecological conditions, and trends in those conditions, at a defined site. It provides the detailed answers to the 12 specific questions, with justifications of the associated ratings. It presents information in an easily understood and accurate manner. The reported results represent the consensus reached by those judging the status of the MPA at the relevant time—and much like a diagnosis produced by a medical team examining a hospital patient, the environmental parameters reported for a MPA reflect the core elements of the ecosystem's functioning, or health. Thus, ecosystem health is considered "a condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes."[1]

1. See Parks Canada, What Is Ecological Integrity? at http://www.pc.gc.ca/eng/progs/np-pn/ie-ei.aspx.

How to Complete a Scorecard

Completing an ecological scorecard is a relatively straightforward process. It comprises the following steps:

1 The MPA site manager and expert team engaging in the scorecard process review the questions and scoring methodology presented in this guide.
2 They conduct a workshop to which they have invited key experts and those knowledgeable about the site for which a scorecard is being prepared.
3 The workshop is completed on the basis of evidence shared by the experts, before the workshop and during it.
4 The results of the workshop are shared directly with site management and experts, followed by a peer review process. Once the peer review is completed, the final condition report is released. (These steps are described in detail in **Section 3**).

Peer review panels should be convened as needed to provide expert opinion on the results. They should consist of resource managers, monitoring experts or other experts with knowledge of site-based monitoring and management. In addition to reviewing the scorecards of individual sites, the panels may suggest changes to the process or to the reporting system and they may recommend partnerships, to enhance the scorecard process.

Summary of Scorecard and Condition Report Process

1 The scorecards report the findings for the **12 questions** on water, habitat and living resources, and on the human interactions with those resources.
2 The answers to each question indicate the **current condition on a five-point scale**, from critical to superior, and indicate **trends** in five categories, ranging from rapidly improving to rapidly degrading. Conditions are visually represented by colors and trends by arrows, making it easy to determine the health of a specific site.
3 For each MPA, experts participate in a **workshop** to assess resource conditions and to reach a consensus on scores (see Section 3).
4 Expert participants use the **standard questions and standard definitions** for scores. (Most participants will have received the questions and instructions, with definitions of scores, prior to the workshop).
5 All participants **identify sources of evidence** for resource condition scores and trends, which are documented as the **bases for judgment** and references.
6 Resource experts consider and evaluate the evidence from monitoring and other observations of conditions in order to **synthesize and interpret** the findings.
7 Participants in the workshop come to a **consensus** on the current health of the MPA ecosystem and the prognosis for trends.
8 Immediately after the workshop, scorecards are subjected to **peer review** (10 to 15 days).
9 The results of the condition report are **released** to the other experts, the public and decision makers.
10 A timeline is agreed on to **update** the report and scorecard, to monitor changes in condition (usually three to five years).

Because professional judgment is central to creating a scorecard, the process which is used to allow for discussion among experts and for making decisions in assessing a site is as important as the assessments themselves. The process can serve as an effective tool for engaging non-experts in understanding the myriad of complexities and trade-offs inherent in assessments of ocean conditions. Reporting on the basis of evidence requires interpretation, and, by its nature, interpretation is subjective. To address this issue, the scorecard model includes a set of standardized statements for condition and trend that is designed to limit interpretation errors.

Photo: Claudio Contreras

SECTION 2
THE SCORECARD QUESTIONS—A MORE DETAILED LOOK

This section provides a detailed explanation of the 12 scorecard questions, including the standardized statements for each of the five-point rating options for the current status. These statements allow those conducting scoring to characterize the state of the marine protected area in relation to the question.

Question 1 Human Activities

To what extent do human activities influence water quality and inputs, and how are they changing?

Among the human activities that affect water quality are those involving direct discharges (e.g., transiting vessels, visiting vessels, onshore and offshore industrial facilities, public wastewater facilities), those that contribute contaminants to stream, river and water control discharges (e.g., agriculture, runoff from impermeable surfaces through storm drains, conversion of land use), and those releasing airborne chemicals that are subsequently deposited via particulates at sea (e.g., vessels, land-based traffic, power plants, manufacturing facilities, refineries). In addition, dredging and trawling can resuspend contaminated sediments. Dams and other water diversions (e.g., withdrawals from groundwater) alter the quality, quantity and geographic and temporal distribution of water entering coastal ecosystems. Dredging coastal features to create and maintain navigational features also changes local circulation patterns and water quality.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Few or no activities occur that are likely to affect water quality and inputs negatively.	Superior
Some potentially harmful activities exist, but they do not appear to have had a negative effect on water quality and inputs.	Good
Selected activities have resulted in measurable resource impacts, but evidence suggests the effects are localized, not widespread.	Fair
Selected activities have caused or are likely to cause substantial impacts, and cases to date suggest a pervasive problem.	Poor
Selected activities warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts have occurred or are likely to occur.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 2 Nutrient Health

To what extent are altered nutrient loads affecting ecosystem health, and how are they changing?

Ecosystem health in this process refers to the state of an ecosystem in which functions and processes are adequate to maintain the diversity of biotic communities over time and are commensurate with the communities initially found there. Nutrient enrichment or depletion beyond normal variation in quantity and distribution in time and space often leads to unhealthy shifts in ecosystem structure and functioning. Nutrient dynamics may affect benthic communities directly through space competition. Overgrowth and other competitive interactions (e.g., accumulation of algal-sediment mats) often lead to shifts in dominance in the benthic assemblage. Disease incidence and frequency also can be affected by algae competition and the resulting chemistry along competitive boundaries. Blooms may affect water column conditions, including light penetration and plankton availability, which can alter pelagic food webs. As biotoxins are released into the water and air during harmful algal blooms, oxygen can be depleted and affect the resources. Reduced nutrient levels may also reduce system productivity or change the species of primary producers, with the consequent ecological cascading effects.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Conditions do not appear to have the potential to negatively affect ecosystem health.	Superior
Selected conditions may preclude full development of living resource assemblages and habitats, but they are not likely to cause substantial or persistent declines.	Good
Selected conditions may inhibit the development of assemblages, and may cause measurable but not severe declines in living resources and habitats.	Fair
Selected conditions have caused or are likely to cause substantial declines in some but not all living resources and habitats.	Poor
Selected conditions have caused or are likely to cause severe declines in most if not all living resources and habitats.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 3 Human Health

To what extent do water conditions pose risks to human health, and how are they changing?

Human health concerns are generally aroused by evidence of contamination (usually bacterial or chemical) in bathing waters or in fish intended for consumption. These conditions also emerge when harmful algal blooms are reported, or when cases of respiratory distress or other disorders attributable to harmful algal blooms increase dramatically. Any of these conditions should be considered in the course of judging the risk to humans posed by waters in the marine environment.

Some areas may have specific information on beach and shellfish conditions. In particular, beaches may be closed when criteria for safe water body contact are exceeded, or shellfish harvesting may be prohibited when contaminant loads or infection rates exceed certain levels. These conditions can be evaluated in the context of the descriptions below.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Conditions do not appear to have the potential to negatively affect human health.	Superior
Selected conditions that have the potential to affect human health may exist, but human impacts have not been reported.	Good
Selected conditions have resulted in isolated human impacts, but evidence does not justify widespread or persistent concern.	Fair
Selected conditions have caused or are likely to cause substantial impacts, but cases to date have not suggested a pervasive problem.	Poor
Selected conditions warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts are likely or have occurred.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 4 Human Activities

To what extent do human activities influence habitat extent and quality, and how are they changing?

Human activities that degrade or improve habitat quality do so by affecting structural (geological), biological, oceanographic or chemical characteristics. Structural impacts consist of removal or mechanical alteration, including various fishing techniques (e.g., trawls, traps, dredges, longlines, and even hook-and-line in some habitats), dredging channels and harbors and dumping spoil, vessel groundings, anchoring, laying pipelines and cables, installing offshore structures, discharging drill cuttings, dragging tow cables and placing artificial reefs. Removal or alteration of critical biological components of habitats can occur along with several of the above-mentioned activities, most notably trawling, groundings and cable drags. Marine debris, particularly in large quantities (e.g., lost gill nets and other types of fishing gear), can affect both biological and structural habitat components. Changes in water circulation often occur when channels are dredged, fill is added, coastal areas are reinforced or other construction takes place. These activities affect habitat by changing food delivery, waste removal, water quality (e.g., salinity, clarity and sedimentation), recruitment patterns and a host of other factors. Chemical alterations most commonly occur following spills and can have both acute and chronic impacts. Ecological restoration programs may reduce the impacts of alien species that alter habitat, improve water circulation or reintroduce extirpated habitat-forming species such as sea grass.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Few or no activities occur that are likely to affect habitat extent and quality negatively.	Superior
Some potentially harmful activities exist, but they do not appear to have had a negative effect on habitat extent and quality.	Good
Selected activities have resulted in measurable habitat impacts, but evidence suggests the effects are localized, not widespread.	Fair
Selected activities have caused or are likely to cause substantial impacts, and cases to date suggest a pervasive problem.	Poor
Selected activities warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts have occurred or are likely to occur.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 5 Contaminants

To what extent do contaminants in habitats or the food web affect living resources or water quality, and how are they changing?

This question addresses the need to understand the risks posed by contaminants within benthic formations, such as soft sediments, hard bottoms or structure-forming organisms. In the first two cases, the contaminants can become available when released via disturbance. They can also pass upwards through the food chain after being ingested by bottom-dwelling prey species. The contaminants of concern generally include pesticides, hydrocarbons and heavy metals, but the specific concerns of individual sanctuaries may differ substantially.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Contaminants do not appear to have the potential to affect living resources or water quality negatively.	Superior
Selected contaminants may preclude full development of living resource assemblages, but are not likely to cause substantial or persistent degradation.	Good
Selected contaminants may inhibit the development of assemblages, and may cause measurable but not severe declines in living resources or water quality.	Fair
Selected contaminants have caused or are likely to cause substantial declines in some but not all living resources or water quality.	Poor
Selected contaminants have caused or are likely to cause severe declines in most if not all living resources or water quality.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 6 Extent and Distribution

To what extent does habitat alteration, including the extent and distribution of major habitat types, affect ecosystem health, and how is it changing?

Habitat loss is of paramount concern when it comes to protecting marine and terrestrial ecosystems. This question addresses the outcomes of the human activities discussed in the previous question, not the activities themselves. The loss of shoreline is recognized as a problem indirectly caused by human activities. Habitats with submerged aquatic vegetation are often altered by changes in water conditions in estuaries, bays and nearshore waters. Intertidal zones can be affected for long periods by spills, trampling, collecting or by chronic pollutant exposure. Beaches and haul-out areas can be littered with dangerous marine debris, as can the water column or benthic habitats. Sandy subtidal areas and hard bottoms are frequently disturbed or destroyed by trawling. Even rocky areas several hundred meters deep are increasingly affected by certain types of trawls, bottom longlines and fish traps. Submerged reefs are damaged by groundings, anchors and divers. Cables and pipelines disturb corridors across numerous habitat types and can be destructive if they become mobile. Shellfish dredging removes, alters and fragments habitats.

This question is also intended to address biogenic habitats, where organisms form structures on which other organisms depend. The integrity of these "biologically structured" habitats is largely determined by the condition of particular types of living organisms. Coral reefs may be the best-known examples of biologically structured habitats. The substrate itself is biogenic, and the diverse assemblages residing within and on coral reefs depend on that structure for shelter, food and other critical functions. Similarly, kelp beds provide essential habitat for assemblages that would not reside or function together without it. There are other communities of organisms that are also similarly co-dependent, such as hard-bottom communities, which may be structured by bivalves, octocorals, coralline algae or other groups that generate essential habitat for other species. Intertidal assemblages structured by mussels, barnacles, sea grass beds and algae are other examples.

The result of destructive activities is the gradual reduction of the extent and quality of marine habitats. Losses can often be quantified through visual surveys and to some extent using high-resolution mapping. This question asks about extent and quality of habitats compared to those that would be expected without human impacts. The status depends on comparison with a baseline that existed in the past—one toward which restoration efforts might aim.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Habitats are in pristine or near-pristine condition and are unlikely to preclude full community development.	Superior
Selected habitat alteration has taken place, precluding full development of living resources assemblages, but is unlikely to cause substantial or persistent degradation in living resources or water quality.	Good
Selected habitat alteration may inhibit the development of assemblages, and may cause measurable but not severe declines in living resources or water quality.	Fair
Selected habitat alteration has caused or is likely to cause substantial declines in some but not all living resources or water quality.	Poor
Selected habitat alteration has caused or is likely to cause severe declines in most if not all living resources or water quality.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 7 Human Activities

To what extent do human activities influence living resource quality, and how are they changing?

Human activities that degrade living resource quality do so by causing a loss or reduction of one or more species, by disrupting critical life stages, by impairing various physiological processes, or by promoting the introduction of alien species or pathogens. *(Note: Activities that impact habitat and water quality may also affect living resources. Questions 4 and 7 deal with these activities, and many are repeated here as they also have direct effect on living resources*).

Fishing and collecting are the primary means of removing the ocean's resources and altering population and community resiliency. Bottom trawling, seine fishing and the collection of ornamental species for the aquarium trade are all common examples, some being more selective than others. Chronic stress can be caused by marine debris derived, for example, from commercial or recreational vessel traffic, lost fishing gear and upland discharges of trash, resulting in the gradual decline of some species. Unrestricted visitor access may also disturb breeding, feeding, or other essential wildlife activities.

Critical life stages can be affected in various ways. Mortality in adult stages is often caused by trawling and other fishing techniques, cable drags, dumping spoil or drill cuttings, vessel groundings, or persistent anchoring. Contamination of areas by acute or chronic spills, discharges by vessels, or by municipal and industrial facilities can make them unsuitable for recruitment: the same activities can make nursery habitats unsuitable. Although coastal armoring and construction can increase the availability of surfaces suitable for the recruitment and growth of hard-bottom species, the activity may disrupt recruitment patterns for other species (e.g., intertidal soft-bottom animals), and habitat may be lost.

Spills, discharges and contaminants released from sediments (e.g., by dredging and dumping) can all cause physiological impairment and tissue contamination. Such activities can affect all life stages by reducing fecundity, increasing larval, juvenile, and adult mortality, reducing disease resistance and increasing susceptibility to predation. Bioaccumulation allows some contaminants to move upward through the food chain, disproportionately affecting certain species.

Activities that promote the introduction of alien species include mariculture, bilge discharges and ballast water exchange, commercial shipping and vessel transportation. Releases of aquarium fish can also lead to the introduction of alien species.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Few or no activities occur that are likely to affect living resource quality negatively.	Superior
Some potentially harmful activities exist, but they do not appear to have had a negative effect on living resource quality.	Good
Selected activities have resulted in measurable living resource impacts, but evidence suggests the effects are localized, not widespread.	Fair
Selected activities have caused or are likely to cause substantial impacts, and cases to date suggest a pervasive problem.	Poor
Selected activities warrant widespread concern and action, as large-scale, persistent and/or repeated severe impacts have occurred or are likely to occur.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 8 Biodiversity

What is the status of biodiversity, and how is it changing?

This question is intended to elicit thought about and assessment of the condition of living resources, based on expected biodiversity and the interactions among species. Intact ecosystems require that all parts not only exist but also function together, resulting in natural symbioses, competition and predator-prey relationships. Community integrity, resistance and resilience all depend on these relationships. Abundance, relative abundance, trophic structure, richness, H' diversity, evenness and other measures are often used to assess these attributes. The CEC view of biodiversity is broad and includes species, habitats and ecological processes. Since no comprehensive measure of biodiversity exists for the B2B region, experts assessing biodiversity should embrace many different factors, including physiographic and oceanographic features, beta-level biological diversity (between habitat diversity) continental endemism, key habitats (breeding and feeding sites and migratory routes for marine species of common concern), critical habitats for other keystone or focal species, and areas of high biomass or productivity such as upwelling centers.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Biodiversity appears to reflect pristine or near-pristine conditions, with full community development and function.	Superior
Selected biodiversity change has taken place, precluding full community development and function, but it is unlikely to cause substantial or persistent degradation of ecosystem health.	Good
Selected biodiversity change is likely to inhibit full community development and function, which may cause measurable but not severe degradation of ecosystem health.	Fair
Selected biodiversity change has caused or is likely to cause substantial declines in some but not all ecosystem components and reduce ecosystem health.	Poor
Selected biodiversity change has caused or is likely to cause severe declines in ecosystem health.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 9 Extracted Species

What is the status of extracted species, and how is it changing?

Some commercial and recreational harvesting activities are highly selective, for which fishers and collectors target a limited number of species and can remove high proportions of the populations. In addition to removing large amounts of biomass from the ecosystem and thereby reducing its availability to other consumers, these activities can disrupt specific and often critical food web links. When too much extraction occurs (i.e., ecologically unsustainable harvesting), trophic cascades ensue, resulting in changes in the abundance of nontargeted species as well. Fishery take also selectively removes the largest individuals and reduces the capacity of targeted species to replenish their populations at a rate that supports continued ecosystem health.

It is essential to understand whether removals are occurring at ecologically sustainable levels. Knowing extraction levels and determining the impacts of removal are both ways that help gain this understanding. Measures for catch amounts for target species abundance, trophic structure and changes in nontarget species abundance are all generally used to assess these conditions.

Other issues related to this question include whether fishers are using gear that is compatible with the habitats being fished and whether that gear minimizes bycatch and the incidental take of nontarget species such as fish, sea turtles, marine mammals and birds. For example, bottom-tending gear often destroys or alters both benthic structure and nontargeted animal and plant communities. "Ghost fishing" occurs when lost traps continue to capture organisms. Lost or active nets, as well as the lines used to mark and tend traps and other fishing gear, can entangle marine mammals and diving birds. Any of these could be considered indications of environmentally unsustainable fishing techniques.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Key extracted species approach natural, pristine levels and allow full community development and function.	Superior
Key extracted species have declined, but there is no evidence of effects on community development and/or function.	Good
Key extracted species have declined, and there is evidence of impacts on community development and function; recovery appears possible.	Fair
Key extracted species have declined substantially, and there is evidence of impacts on community development and function; recovery is at risk.	Poor
Key extracted species have severely declined, and there is evidence of severe impacts on community development and function; recovery is unlikely.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 10 Key Species

What are the status and condition of key species, and how are they changing?

Key species can include keystone species, indicator species or other focal species. "Keystone" species are those on which the persistence of a large number of other species in the ecosystem depends—that is, they are the pillars of community structure and function. Their contribution to ecosystem function is disproportionate to their numerical abundance or biomass, and their role is therefore important at the community or ecosystem level. Their removal causes changes in ecosystem structure and sometimes the disappearance of, or dramatic increase in, the abundance of dependent species. Keystone species may include certain habitat modifiers, predators, herbivores and those involved in critical symbiotic relationships (e.g., cleaning or co-inhabiting species).

"Indicator" species are those whose abundance and/or condition are early signs of changes in the condition of an ecosystem. Like canaries in coal mines, they are often particularly sensitive species, responding before others to changing conditions. In the marine environment they may be species with sensitive larval phases (e.g., certain echinoderms), rapid colonizers in altered habitats (e.g., certain turf algae), species near the limits of their distribution, or species whose condition reflects metabolic stress (e.g., coral bleaching). Certain other measures of condition may also be used as indicators of change, such as unusual growth rates, fecundity, recruitment levels, or pathologies (e.g., disease incidence, tumors, deformities, or parasite loads).

Certain species can also be defined as "focal" within a given marine area. These may include species that are targeted for special protection efforts, or charismatic species with a special cultural value that are identified with certain areas or ecosystems –they should not include species at risk. They do not meet the definition of keystone or indicator species, but they do require assessments of status and trends. Also, in contrast to keystone species, the impact of changes in the abundance or condition of focal species is more likely to be observed at the population or individual level and less likely to result in ecosystem or community effects.

Important measures of condition for any of these species may include growth rates, fecundity, recruitment, age-specific survival, tissue contaminant levels, pathologies (e.g., disease incidence, tumors, deformities), the presence and abundance of critical symbionts, or parasite loads.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
The status and condition of key species approach natural historic levels.	Superior
The status or condition of selected key species has declined, but there is no evidence of impacts on community development and function.	Good
The status or condition of selected key species has declined, and there is evidence of impacts on community development and function; recovery appears possible.	Fair
The status or condition of selected key species has substantially declined, and there is evidence of impacts on community development and function; recovery is at risk.	Poor
The status or condition of selected key species has severely declined, and there is evidence of severe impacts on community development and function; recovery appears unlikely.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 11 Species at Risk

What are the status and condition of species at risk, and how are they changing?

The criteria used to designate species at risk may differ from country to country. But regardless of how they have been designated, such species clearly have distinct management needs. Understanding the status and trends of any species at risk within a site helps to establish a link between the site and activities that may be occurring in the areas surrounding it. Such species may occupy niche habitats, or they may be under harvest pressure either directly or as bycatch. Marine protected areas can serve as havens for such species, depending on their habitat needs and behavior. The impact of changes in the abundance or condition of species at risk is more likely to be observed at the population or individual level.

Where applicable, attention should be paid to the CEC list of North American Species of Common Conservation Concern (SCCC)[2]. Canada, Mexico and the United States developed this list in order to help identify commonalities such as common threats, critical habitats and endangered ecosystems, as well as potential solutions. These species serve as useful targets for allocating scarce conservation resources. In most cases, the contribution of these migratory or transboundary species to the whole ecosystem is disproportionate to their numerical abundance or biomass. Their impact is therefore important at the community or ecosystem level. These species represent opportunities to take a broader conservation perspective, look for common threads and bind conservation approaches together for the continent and its shared species, thereby helping to advance conservation more rapidly with a more comprehensive, continental-scale approach—an approach which works to protect species and their habitats, to ensure the sustainability of resources and to study the effects of human activities on ecosystems. Measures of condition for any of these species may include distribution, abundance, conservation status, growth rates, fecundity, age-specific survival, tissue contaminant levels, and pathologies (e.g., disease incidence, tumors or deformities).

2 The SCCC species are *Dermochelys coriacea* (leatherback sea turtle), *Eretmochelys imbricata* (hawksbill sea turtle), *Lepidochelys kempii* (Kemp's Ridley sea turtle), *Chelonia mydas agassizii* (Pacific green sea turtle), *Caretta caretta* (loggerhead sea turtle), *Eubalaena glacialis* (northern right whale), *E. japonica* (North Pacific right whale), *Eschrichtius robustus* (gray whale), *Megaptera novaeangliae* (humpback whale), *Orcinus orca* (orca), *Balaenoptera musculus* (blue whale), *Arctocephalus townsendi* (Guadalupe fur seal), *Enhydra lutris* (sea otter), *Phocoena sinus* (vaquita), *Puffinus creatopus* (pink-footed shearwater), *Phoebastria albatrus* (short-tailed albatross) and *Synthliboramphus hypoleucus* (Xantus' murrelet).

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
The status and condition of selected species approach natural historical levels within the site.	Superior
The status or condition of selected species has declined to some extent, but the appearance of good condition of individuals suggests that the population is not at risk at the site.	Good
The status or condition of selected species has declined substantially from natural historic levels at the site.	Fair
The status or condition of selected species has substantially declined from historic levels, or the condition of animals that are present suggests limited viability at the site.	Poor
The status or condition of selected species has severely declined from historic levels, and the unhealthy condition of animals that are present suggests limited viability at the site.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Question 12 Alien Species

What is the status of alien species, and how is it changing?

Alien species (sometimes called non-native or non-indigenous species) are generally considered problematic and candidates for rapid response, especially if found soon after invasion. Those that become established (so-called invasive species) can sometimes be assessed by quantifying changes in the affected native species or habitats. This question allows areas to report on the threat posed by alien species. In some cases, the presence of a species alone constitutes a significant threat (e.g., certain invasive algae). In other cases, although impacts have been measured, effects on ecosystem health are unclear.

The following standardized statements define scoring categories for this question.

Condition statement	Implied score
Alien species are not suspected or do not appear to impair full community development and function.	Superior
Alien species exist that may preclude full community development and function, but they are unlikely to cause substantial or persistent degradation.	Good
Alien species preclude full community development and function, and may cause measurable but not severe degradation of ecosystem health.	Fair
Alien species have caused or are likely to cause substantial declines in some but not all ecosystem components and reduce ecosystem health.	Poor
Alien species have caused or are likely to cause severe declines in ecosystem health.	Critical
Information is insufficient or the question is not applicable.	Undetermined

Photo: Octavio Aburto

SECTION 3
HOW TO DEVELOP A MARINE ECOLOGICAL SCORECARD

This section describes preparations for developing a marine ecological scorecard and its corresponding condition report, including steps to conduct the workshop, suggestions for carrying out the peer review process, and ideas about sharing the results with others.

Preparing for Site Scorecard (three months in advance)

Getting the MPA Site Manager Onside

To prepare for the workshop, it is important to have the permission and support of the MPA site management. This should be sought at **least three months** in advance. Keeping the manager "in the loop", is vital to the success of the initiative, and it is worth emphasizing that it is an ongoing process. In some cases, such support will come through a broader management directive; in others the site manager will rely on the advice and direction of his or her staff.

Those given the task of engaging the site manager could present several arguments in favor of the process. Specifically, the arguments include that the scorecards and condition reports can be expected to do the following:

- **Enhance credibility by acting as an external standard.** The process is not defined by the MPA site, but is external to the site, offering a new standard. This enhances the credibility of the result, a benefit that can be communicated to stakeholders. In addition, the method itself involves external experts, which adds credibility to the result.

- **Support and validate existing reporting by the site.** Based on an ecological framework and principles of ecosystem health, a scorecard reinforces other reporting and approaches. For example, it may help site managers identify factors not apparent in existing reporting. It also complements (and might affirm) the accuracy of the existing reporting.

- **Bring experts together to talk about the whole system.** The method builds on the capacity of individual experts, yet moves individual experts beyond their "own" species or interests to consider other resources. Developing a scorecard allows both researchers and site staff to see "the whole" and to communicate the result simply and consistently.

- **Enhance knowledge and make knowledge gaps apparent.** The process allows managers to pull together information from a wide variety of sources, not just site-based monitoring, and to synthesize this information, based on expert input and a consistent framework. This approach allows managers to get an overall view of the site based on multiple sources of knowledge which are not as accessible through site-based reporting alone. By involving experts outside the site, the process takes the information about each site beyond its borders. Any knowledge gaps at the site level become apparent and are communicated through the scorecard.

- **Promote collaboration.** Involving a range of experts, including those outside the site, and aiming for an expert consensus both at the scorecard workshop and in the input at all stages, the process promotes collaboration among staff at the site, as well as among researchers at institutions that may not traditionally work together. Through communications products, the method also links researchers with others (e.g., staff, the public and decision makers) and helps demonstrate the importance of their work, such as monitoring. The method also allows for and supports connections with other MPAs, which might themselves be developing scorecards and designing supporting monitoring programs.

- **Be simple to apply and simple to understand.** The scorecard process and condition report are clear and easy for experts, site managers, the public and policy makers to follow.

- **Support and build a case for manager's needs.** By giving strong evidence and insights into the confidence that can be placed in this evidence, the method can support a business case for needed investments in monitoring or management measures. The method allows managers to assess performance using a new tool, and it can help support performance reports.

Planning the Workshop (two months in advance)

The following materials are required for a workshop:

- Letter of invitation (see draft in **Appendix A**)
- Two-day workshop agenda (see draft in **Appendix B**)
- MS PowerPoint presentations (see **www.cec.org/nampan**):
  - PPT 1 - *Introduction: Towards an Integrated Reporting System for Marine Protected Areas in the Baja to Bering Sea Region (B2B)*
  - PPT 2 - *Methodology overview: Developing Marine Ecological Scorecards*
  - PPT 3 - *Scorecard Questions*
- Tracking evidence form (see **Appendix D**)

It is recommended that the planning process begin **two months** before the workshop.

As a first step, and based on management support, experts who are familiar with the site's status and trends should be identified and invited to the workshop. The expert panel should include site managers and their technical advisers, academic specialists, agency and nongovernmental scientists, and other recognized subject matter experts with traditional or other knowledge. It might be helpful to group experts by theme or question. The number of experts should be between 8 and 15; this will help ensure that every participant has an opportunity to participate in discussing the questions and reaching consensus judgements, and that the agenda is covered in a timely way.

There will be times when not all of the experts invited will be able to participate in the meeting. Depending on their level of expertise, their participation can sometimes be accommodated (e.g., by teleconference or Web conference, or through attendance by a representative who shares the absent person's expertise). Experts who cannot attend should be told that they will have an opportunity after the workshop to comment on any draft scorecard produced. It is important to consider and discuss this post-workshop process with participants at the meeting—especially how to consider this input when it does not agree with the decisions and consensus reached at the workshop.

Experience suggests that the scorecard workshop should take place over two days, to allow sufficient time to address each of the themes fully, especially when plenty of information about the site in question is available. However, if the time constraints of selected experts prevent a two-day workshop, more work can be done beforehand to enable achievement of a scorecard in one day.

Identifying a Facilitator

The scorecard method is improved with the support of a facilitator, who is impartial but has basic expertise and an understanding of marine ecology and ocean health. The facilitator needs to understand the method and the important role that he or she will play as a steward of the scorecard process.

The facilitator should not be one of the experts and should not be involved in the scoring, except as an overseer of the process. This individual should remain impartial to the judgments of the experts and should not engage in debates on answers to the questions. His or her role is to oversee the workshop activities, clarify the process (including the standard questions and condition categories) and ensure that the agenda is followed. The site manager should not be burdened with this role because such involvement may influence the impartiality of the process. The site manager should be free to participate in the process, ask clarifying questions and contribute examples and experiences with the rest of the expert panel.

Preparing Pre-workshop Communications (six weeks in advance)

As noted earlier, between 8 and 15 experts should be invited to participate in the workshop to discuss the 12 standard questions and reach consensus judgments, although at times more experts may be required.

As for those who have expertise and evidence to contribute but are not invited, they could be told before the workshop that

they will have an opportunity to be involved later in the process, as reviewers. Worskshop participants should be aware of this: it is important to let them know that expert reviewers not involved in the workshop will have an opportunity to comment on the results.

A draft letter of invitation to the workshop appears in Appendix A, and a draft agenda appears in Appendix B. A letter should be drafted as well for those not attending. In both cases, the letter should highlight how the process will unfold, identify who will prepare the draft scorecard, and identify who will be responsible for process and results. The invitation letter should also identify the workshop facilitator. **It is important to inform the experts invited to the workshop that they should be prepared to share evidence on the MPA's status and trends at the meeting.**

Invitation letters might include the following attachments:

- the draft agenda for the meeting, whether the recipient of the letter will participate or not;
- documentation of the scorecard method, including the questions and the ratings;
- information about this scorecard process, including background on the process and the origins of the trinational effort to develop a reporting method on ecological conditions of MPAs;
- a sample scorecard;
- basic information about the MPA site that helps set the stage for scorecard development, including historical conditions, key ecological features and human activities that may influence the site; and
- a link to NAMPAN's website: www.cec.org/nampan.

The site manager should be involved, if possible, in sending the invitations. Who sends the invitation is often very important to the credibility of the process. It can help manage expectations about how results will be used, and is important to encouraging participation.

One workshop precursor activity which both aids in planning and will improve the efficiency of the assessment process is to develop an inventory of human activities that influence the MPA. Listing responses to the question "What human activities take place that evidence indicates has influence over this MPA, and how are they changing?" will serve as a foundation for addressing many of the 12 standard questions. Sharing the list of relevant human influences with participants at the outset of the workshop will greatly facilitate subsequent discussions.

To help to manage the possibility of skewing the results to support a participant's view or ulterior motive ("gaming") at the meeting, it is useful to carefully consider which supporting documents are provided to the participants prior to the workshop. There are two approaches that can be used, depending upon the participants and the judgment of the organizing committee:

1. Each participant can be asked to complete the scorecard exercise on his or her own and bring their results to the workshop, where all participants can review the individual scorecards and combine and collate information arriving at a consensus on the scores.
2. Participants can undergo a collective scoring exercise during the workshop.

Whichever approach is adopted, it should be clearly documented and applied as rigorously as possible.

Final Communications (two weeks in advance)

A final step in the workshop planning is to send a brief email to participants reminding them of the upcoming workshop, indicating who will be participating, both at the workshop and as reviewers after the workshop, and, of course, expressing appreciation for their participation.

Reviewing Background Information

At the workshop, participants should receive background information on the scorecard process and the core methodological issues should be discussed with them.

Two background presentations are available. The presentations include a history of the scorecard process, provide context on some of the issues that NAMPAN has considered in relation to the scorecard, address some of the methodological issues that come up, and present each of the questions in summary format to ensure that everyone is on common ground prior to actually scoring.

The presentations also will give participants a sense that the process has been designed carefully and thoughtfully.

Methodological Issues to Be Discussed at the Workshop

- **Clarifying the baseline**: The baseline should be the pristine or near-pristine condition, not the state when the MPA was put in place.
- **Focusing on the standardized statements**: When replying to each question, for both status and trend, the experts should focus on the standardized statements, not the color or arrow.
- **Solving the problem of no consensus**: The workshop facilitator should apply the Delphi method.
- **Scoring:** Participants should assess, based on the best available information (evidence), when to score or not to score.
- **Gaming the system**: Articulating the rules of the process at the workshop may help avoid this problem.
- **Tracking evidence**: Evidence should be tracked in two ways if possible: summary statements of evidence and a list of references.
- **Addressing postworkshop participation and new evidence**: It is essential to decide how to deal with input from those not attending the workshop.

Clarifying the Baseline

To the extent that information is available, **the baseline should be defined in terms of pristine or near-pristine conditions**, not the state that prevailed when the MPA was created.

Where information is limited, experts should discuss and try to come to some consensus on what pristine or near-pristine conditions would have been. Discussing and agreeing on a consistent baseline are critical to the scorecard methodology, because this baseline is implicit in the standardized statements for each question. Where there is lack of agreement on the baseline, a discussion about the different understandings participants have of "pristine" when referring to the definition of ecological health will likely help clarify the situation.

Where possible, historical information should be collected and shared either prior to or at the workshop, and participants could be asked to identify and share any historical information. At this stage, involving those participants with "traditional knowledge" may be helpful to the process.

Focusing on the Standardized Statements

As noted earlier, when experts reply to each question, the focus of the discussion and any decisions participants make should be on wording set out in the standardized statements, rather than on the color or arrow associated with the answer. For both condition and trend, the PowerPoint presentation available on the NAMPAN website (www.cec.org/nampan) for addressing the questions includes the descriptions, but not the colors or arrows. By focusing on the descriptions rather than the result in a scorecard, the process remains objective.

In general, participants should keep in mind that an MPA often has more control over the trend than the condition, or present state. For example, where an MPA has been established in a degraded area, the condition of the site may take years to change, the rate of which may be improved through management practices. The score for trend captures these management practices more quickly than the score for state.

Solving the Problem of No Consensus

To the extent possible, those at the workshop should aim to reach a consensus on the condition category.

Where consensus is not possible, it will be best to apply a process that ensures any dissent is tracked and a final score is reached. One solution is to use the Delphi method, a well-known, systematic, interactive forecasting method for obtaining input from a panel of independent experts. Under this method, the experts answer the question in three rounds by discussing and then dropping each of their scores in a hat or other container. After each round, a facilitator provides a summary of the experts' vote from the previous round, as well as a brief reason for the judgment, without specifying names. After a discussion, participants are encouraged to revise their earlier answers in light of the replies of other members of the group. In general, during this process the range of the answers decreases and the group converges toward the "correct" answer. The process is halted after a predefined stop point is reached (e.g., three rounds are complete, consensus is achieved, or the results appear stable,) and the mean or median scores of the final rounds determine the result.

The result should be discussed, but if time is pressing, the facilitator should use the input received and let participants know that the workshop must move forward. When using this method, it is important to empasize to the participants that they should consider and draw on the evidence presented by other participants when making their own judgments.

Assessing Confidence in the Evidence

Knowing when to score and when not to score is important. It may be a question of confidence in the evidence rather than agreement

on its meaning. When there is little evidence, or the confidence in the evidence is not high, scoring may not be possible.

It is recommended that in assessing whether the evidence is sufficiently strong to allow for scoring, participants should ask themselves: *Is the evidence strong enough that it could be used to support a recommendation for some management action?* If the answer is yes, then scoring should proceed. If the answer is no, participants should identify why scoring is not possible, with a view to supporting additional monitoring or additional participation.

When participants are confident enough to score, but their confidence remains low in the result, or when scoring is not possible, they can ask themselves the following question: *Is monitoring or research needed that would increase the evidence available and substantially enhance scoring in relation to this question?* Allowing participants to express their concern about the need for more evidence may allow them to score, and should be a basis for describing the nature of the additional evidence that should be sought, through monitoring or by involving other experts.

Of course, when the question is not applicable to the site—for example, no known species are extracted at the site—no scoring is possible or necessary.

It is important to note that variance is higher when there is no comprehensive evidence or when the confidence in the available evidence is low. The NAMPAN pilot project demonstrated that unless there is an explicit discussion of variance, participants in a scorecard workshop have a tendency to shift scores when the evidence is limited. When there is little evidence but it is sufficient to support scoring, it is important to discuss with participants the potential for variance and, to ensure consistency, to apply a precautionary principle to scoring: where participants persist in disagreement, adopt the score that promotes the lower rating for condition or trend.

Gaming the System

At times, participants may attempt to "game" the system—that is, skew the results in order to address some assumptions about how the resulting scorecard will be used. Examples include supporting ratings based on an effort to attract additional funding, to avoid embarrassing a site manager, or to avoid "pointing the finger" at other agencies.

In addressing this problem, it is important that the facilitator have a basic knowledge of the politics of the site and the institutions involved. It is also important that early presentations at the meeting be used to dispel any myths about how the scorecard will be used, and to point out the importance of evidence-based scoring. "Pointing the finger" problems can be addressed by ensuring a varied and balanced representation, and by inviting experts from associated agencies to attend the workshop or to comment on the result as reviwers. Meanwhile, if there is a strong possibility that gaming will creep into the workshop, it is important to articulate the rules of the process at the workshop and to keep the rules visible as a reminder for participants.

Tracking the Evidence

Evidence should be tracked in two ways if possible. First, brief one- or two-paragraph summary statements of evidence used to support the scoring should be prepared. Second, specific references to publications or literature supporting the statement should be gathered.

The process at the workshop for each question should allow for sharing evidence. The discussion should explore the evidence in light of the standardized statements, and a brief summary of key evidence supporting the judgment should be developed either by participants at the meeting (a distinct summary for each question) or by the chair or facilitator after the meeting. If developed at the meeting, the summary statements could be either reviewed at the meeting, if time allows, or reviewed in the scorecard report that is circulated after the meeting.

A form for participants to use to provide complete bibliographic references or evidence sources appears in Appendix D. This form will help the facilitator or secretary to track the evidence used for each question. This information should remain part of the files after the scorecard is finalized, to be made available upon request to subsequent users.

Addressing Post-workshop Participation and New Evidence

When participation at a workshop is not complete because some key experts were unable to attend, or when additional expertise is sought after the scorecard exercise, the participants at the workshop need to discuss and agree on how the workshop facilitator or secretary will integrate any additional input into the scorecard results.

The new input may not agree with the result achieved at the workshop—for example, the input from a new expert may provide clear evidence that would lower the implied score. In this situation, the facilitator (or another person assigned to this task by participants) should ensure that the proposed change is sent to all par-

ticipants, and that everyone is given a chance to provide input and discuss the change. Any discussion needed can be provided for with a conference call.

It is important to keep the site manager involved. He or she should work with the chair or facilitator of the meeting to integrate new input when scoring changes or requires adjustment.

Implementing the Scorecard Process

After the background presentations, the participants will begin the process of addressing the questions. They should read each question and briefly discuss the description associated with it, to ensure that everyone has a common understanding of the question's scope. For some questions, a reference point unrelated to a baseline needs to be established—for example, if a question is related to key species, participants will need to identify which species are the key species. The answers will differ from site to site. Ensuring that all participants are discussing the same list is important to addressing the question. The reference point—for example, the list of key species the experts discussed—should be clearly identified in the resulting scorecard. This discussion should take place prior to examining a condition or trend.

Once the reference point is established, but before addressing the question, experts should share any evidence related to the question and briefly discuss the meaning of the evidence in relation to both state and trend. When all experts have had an opportunity to present and discuss the evidence, scoring can begin. The chair or facilitator should ask the experts to score privately, then have them present their scores, one by one, with a brief rationale—what did they score and why? The results should be recorded, as this becomes important to the statement of evidence.

Once all the participants have indicated their scores, they should discuss the results as a whole. If a quick consensus on the scoring seems possible, the chair or facilitator should ask whether there is consensus on a score—in other words, can everyone live with this score? If yes, the group can move along to the next question. If there is no consensus, private voting should recommence, and this time the results should be kept confidential. The facilitator should tally the results, propose a score based on the results, and ask participants whether they can accept the result or whether another round of scoring is needed. Discussion should be allowed and a final round should be completed as required. The final result should be reported to the participants.

In this manner, participants should address all questions on the agenda. Though it is not necessary, the accuracy of workshop reporting, including capturing evidence, greatly increases if a note taker is present to take notes. The notes can also be helpful if there are questions about evidence already presented or the results on previous questions.

Briefing the Site Manager

Regardless of whether he or she was present at the workshop, the site manager should be briefed on the results of the workshop, including the draft scorecard, and on the process to be used to follow up the workshop, including materials to be sent out with the scorecard and the list of those to be contacted for input. The need for and timing of a peer review should also be discussed with the site manager.

Materials to bring to the briefing can include:

- a draft letter of follow-up for both workshop participants and those who will review the result;
- the final agenda for the workshop;
- a document outlining the scorecard method;
- the draft scorecard in both MS Word (editable) and PDF formats; and
- feedback comments from participants at the workshop on the method.

These materials also should be sent to anyone contacted in follow-up to the scorecard workshop.

Sending the Draft Scorecard to Workshop Participants for Review

After the workshop, a clean draft of the scorecard should be distributed to all those who participated in the workshop, both for feedback and to correct any inadvertent errors made during the transcription of the document.

In preparing the resulting scorecard, the facilitator should also develop a brief description of how it was produced—that is, who was involved and how the questions were addressed—because this information is important to understanding the scorecard itself, the evidence on which it was based, and whether any points of contention or controversy emerged during the process. Indeed, the facilitator may wish to highlight the latter as they may help to inform those interpreting the scorecard.

Initiating the Peer Review Process

Once the draft scorecard has been reviewed by workshop participants, it and the background information can be sent to other experts or site staff to conduct a broader review, especially if key experts were not able to participate in the workshop. Allowing 10–15 working days for peer review of the document is suggested. More time than that can lead to unnecessary delays.

The credibility of the scorecard approach depends on the quality of the program design and the usefulness of the results. NAMPAN experts can convene peer review panels as needed to provide expert evaluation and guidance on the method itself. These panels can consist of resource managers, monitoring experts and other experts with knowledge of site-based monitoring and management. In addition to reviewing the scorecards of individual sites, the panels can suggest changes to the reporting system, or recommend partnerships to enhance the scorecard process. Their recommendations will be based primarily on the need to ensure both that the conclusions remain evidence-based and scientifically defensible, and that the resulting information is accessible to the public and useful to resource managers. Separate comment and review can also be solicited from external reviewers, at the discretion of the NAMPAN experts.

In addition, the NAMPAN experts can conduct broader analysis of the trends or issues underlying scorecards—for example, strategic gaps in monitoring programs, or cross-cutting trends or issues such as alien species—and develop broader programs to explore, consider and report on such trends or issues.

Addressing Needs for Further Changes

As the scorecard process moves forward past peer review, it is important that everyone keep in mind that the strongest consideration of the evidence occurred at the workshop. Those in attendance will have heard the evidence from others, and will have considered trade-offs from competing sources of information. For example, one source of evidence may suggest a downward trend, whereas all others point to improvements. Often, these differences can make sense in a "systems" context, when considered by a range of experts in a room.

In view of this, it is important to adopt the notion that the scoring on any one question will change only if there is strong evidence to support a revised score. When such changes are proposed, the new evidence should be presented along with the new rating suggested. The original participants in the workshop should be involved in making fundamental changes, and any request for such changes should include both the evidence and the recommended rating, either via teleconference discussions or by email.

Sharing the Final Result

NAMPAN experts strongly encourage the sharing of the results of all the completed and approved scorecards with the larger North American audience, by making every scorecard available. Once the scorecard is approved and publicly available, NAMPAN experts may request permission from the MPA to draw on it and other scorecards created to prepare a trinational report on the health of MPAs. This report may also be peer reviewed, and specific sites that have prepared scorecards will have an opportunity either to be involved in the preparation of or to comment on any sections pertaining to their site.

The Ideal Workshop Process: An Overview

1. Get the MPA site manager onboard.
2. Select 8–15 experts to form a diverse group for the assessment workshops, representing different subjects and experiences pertinent to the 12 questions.
3. Select a date and location for a workshop to discuss the questions and reach consensus judgments.
4. Before the workshop, provide the selected experts with guidance on the scorecard method. The guidance should identify the purpose of the scorecard and development process, including the 12 standard questions and associated condition description categories for both state and trends. Ask the experts to score the questions, and submit their answers prior to the workshop. It is helpful as well to provide the experts with basic information on the site (e.g., boundaries, key ecological features).
5. Conduct a facilitated workshop (see the draft agenda in Appendix B), initiate discussions of the standard questions and develop summaries for scoring each of the questions.
6. Summarize the workshop discussions and draft scorecard results, outline the postworkshop review process, including the option of a peer review, and share the results with participants and other experts unable to attend for review, including peer reviewers.
7. Finalize the scorecard, incorporating the comments of participants and other reviewers.

Photo: Darrell G. Gulin/DRK Photo.

SECTION 4
ABOUT THE NORTH AMERICAN MPA SCORECARD SYSTEM

The MPA scorecard system was developed under the supervision of the North American Marine Protected Areas Network (NAMPAN) experts, working through the Commission for Environmental Cooperation. The work on this system, and on other initiatives of NAMPAN, is available online: www.cec.org/nampan.

The process used to reach consensus among experts on the ecological conditions, and the specific questions experts discussed and answered on various aspects of ocean conditions, can actually be as important as the assessments themselves. The process can also serve as an effective tool for engaging non-technical people, helping them understand the myriad complexities and trade-offs inherent in responding to the mixed signals of ocean health. This engagement leads to deeper understanding of ocean conditions. Members of the public and policy makers may use these same questions about ocean health in applying their own knowledge, and in comparing their results with those of the expert panels on the scorecards.

It is important to note that for scorecards and condition reports to be effective and credible, they must be grounded on the systematic collection of knowledge, whether through scientific protocols or through the gathering of community and traditional knowledge. Without this firm grounding, maintained and in some cases expanded, confidence in the results portrayed by a scorecard at any one site will be low. Indeed, investments in collecting data through formal research or monitoring programs are critical in producing an effective scorecard. In some MPAs, the scorecard assessment process helps identify gaps in knowledge, understanding and information monitoring. Although the scorecards and condition reports are no substitute for well-designed, sustained monitoring programs, they do support and encourage development of such programs, by identifying such critical information gaps.

As a proof of concept, the process for the initial ten sites was successful (see the three scorecards and condition reports presented in Section 5). The process effectively summarized large amounts of complex and technical evidence, distilling it into standard descriptions of environmental health for a diverse set of MPAs. The expert group discussions engaged a variety of civic society interests in the scorecard process (see the lists of participants in Appendix E). The scorecards thus provided information of interest to local MPA managers, and gave them a tool for engaging local communities in site stewardship. The scorecards and condition reports also demonstrated that this process is applicable on regional and continental scales, and therefore holds promise for use in adaptive management evaluations at these broader levels.

MPAs selected for pilot testing of the NAMPAN ecological scorecard process in the B2B region

Canada	1	**Pacific Rim National Park Reserve** (Columbian Pacific ecoregion)
	2	**Race Rocks Ecological Reserve** (Columbian Pacific ecoregion)
United States	3	**South Slough National Estuarine Research Reserve** (Columbian Pacific ecoregion)
	4	**California Channel Islands** National marine sanctuary, national park, and 10 state and federal marine reserves (Southern Californian Pacific ecoregion)
	5	**Tijuana River National Estuarine Research Reserve** (Southern Californian Pacific ecoregion)
Mexico	6	**Guadalupe Island** (Southern Californian Pacific ecoregion)
	7	**El Vizcaino Biosphere Reserve** (Southern Californian Pacific ecoregion)
	8	**Bahía de Loreto National Park** (Gulf of California ecoregion)
	9	**San Pedro Martir Island Biosphere Reserve** (Gulf of California ecoregion)
	10	**Upper Gulf of California and Colorado River Delta Biosphere Reserve** (Gulf of California ecoregion)

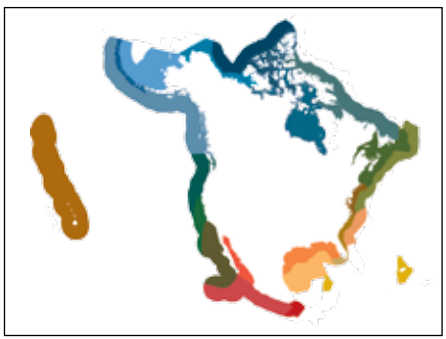
SECTION 5
SAMPLE SCORECARDS FROM THREE MARINE PROTECTED AREAS IN THE B2B REGION

In 2007, the North American Marine Protected Areas Network (NAMPAN) experts agreed to conduct a pilot project, with support from the Commision for Envirnomental Cooperation (CEC), to develop the ecological scorecards and condition reports for North American MPAs. The experts developed the set of questions and the workshop-based process described in the sections above, to assess resource condition and trends at various MPAs in North America based on the consensus judgments of experts. This approach was then tested at marine protected areas along the Pacific coast of Canada, the United States and Mexico.

Lessons learned from work on the initial 10 MPAs have been integrated to support an improved, more consistent approach, as set out in this guide. For example, two questions were removed, reducing the total from 14 to 12—avoiding duplication and streamlining the process. By promoting this structure as a reporting standard and by aiming to support scorecards by a larger number of MPAs, CEC intends to facilitate cooperation and collaboration among North American MPAs, and to assist MPA managers in telling stories of ocean health, informed by information and evidence, which feature the continental scale of their collective endeavors.

As mentioned in Section 1, ten MPAs were selected for the pilot project, all in the B2B region along the Pacific coast of North America, representing a diverse array of biogeographical settings (see Figure 2). Three MPAs were chosen in the Columbian Pacific ecoregion, four in the Southern Californian Pacific ecoregion, and three in the Gulf of California ecoregion.

Figure 2 Marine Ecological Regions of North America



See online: www.cec.org/nampan

These 10 MPAs also ranged widely in size, complexity and environmental setting. The smallest MPA occupies the 250 hectares making up a small archipelago of islands at the tip of Vancouver Island in Juan de Fuca Strait. The largest MPA comprises 16 complete watersheds, coastal lagoons, beaches, rocky reefs, submarine canyons, and open ocean habitats in over 4 million hectares. This diversity ensured that the findings would be robust and reflect the range of conditions found throughout the B2B region of North America.

The CEC convened groups of experts for each MPA to consider the standard questions, to present and receive evidence of conditions and trends and, based on available evidence, to arrive at a consensus on the assessment of the MPA. Managers of the MPAs identified prospective experts, who were invited to attend an expert workshop designed for this purpose. The experts included conservation managers, scientists, community officials and selected members of sectors of society with intimate contact and extensive experience with the MPAs. In early 2010 two additional scorecards were developed for National Park Cabo Pulmo and National Park Archipelago de Espiritu Santo.

For the purposes of this guide, we present three of the ten scorecards that were completed during the initial pilot project in the B2B region, as examples. To see all condition reports and scorecards that have been developed to date, please visit online: www.cec.org/nampan.

MPA 2 Race Rocks Ecological Reserve (Canada)

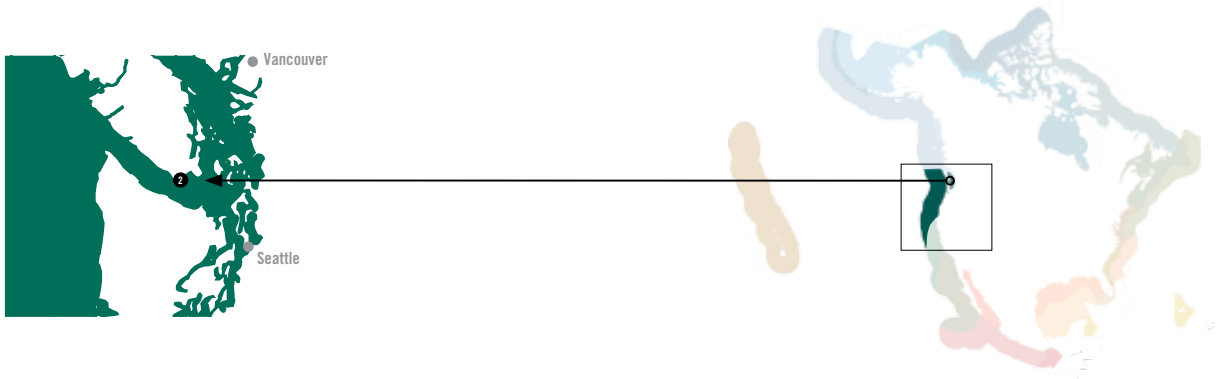


Photo: Garry Fletcher

Race Rocks Ecological Reserve

Race Rocks protects intertidal and subtidal communities that are extremely rich as a result of the strong tidal currents in the area. The reserve, located 17 kilometers southwest of Victoria, British Columbia, on the southern tip of Vancouver Island, at the eastern end of the Strait of Juan de Fuca, occupies the most southerly part of Canada's Pacific coast. Race Rocks is a showcase for Pacific marine life, featuring whales, sea lions, seals, birds and a dazzling array of underwater plants and animals. The protected area is an important teaching site for Lester B. Pearson College.

FACT SHEET

State(s) or province(s): British Columbia

Category: Provincial ecological reserve, Canadian marine protected area—area of interest

Date established: 1980

Area: 251.9 ha

Human settlement: None

Population: Visitors

Infrastructure: Lighthouse (oldest in western Canada) and associated buildings; integrated energy system and atmospheric weather station.

Management authority: British Columbia Parks has given Lester B. Pearson College a 30-year lease to manage this ecological reserve.

Corresponding ecoregion: 21 – Columbian Pacific

Corresponding PCA: 13 – Southern Strait of Georgia/San Juan Islands

Description of the MPA: Race Rocks Ecological Reserve includes an area of ocean and a group of small islands and reefs. Intertidal and subtidal zones have substrates primarily of continuous rock, and a rugged topography that includes cliffs, chasms, benches and surge channels. The location at the southern tip of Vancouver Island plus the rugged shallow sea bottom result in strong currents, eddies and turbulence.

Website: www.racerocks.com

ECOLOGICAL SETTING

Ecosystem diversity: Race Rocks Ecological Reserve protects significant high-current subtidal and intertidal ecosystems, which hold unique assemblages of benthic and pelagic invertebrates. The reserve also provides haulouts and feeding areas for elephant seals and sea lions, and breeding areas for harbor seals. It is a migration stop and resting area for seabirds such as gulls, cormorants, pigeon guillemots, and oystercatchers.

Endemisms: The reserve protects several rare species, including the spiral white snail (*Opalia*), and many rare hydroid species (such as *Rhysia fletcheri*) that represent unique occurrences.

Focal species: Abalone, rockfish, elephant seal, sea lion, pelagic cormorant, Brandt's cormorant, and black oystercatcher.

Species of Common Conservation Concern: Killer whale, humpback whale, and gray whale.

Human activities (inside the MPA or in surrounding areas): Research activities are performed mainly by students from Lester B. Pearson College. Other activities include whale watching, commercial diving, boating, and nature appreciation. The surrounding areas are used for sport fishing, military testing, and marine traffic of oil tankers and freighters.

Condition Assessment Scorecard

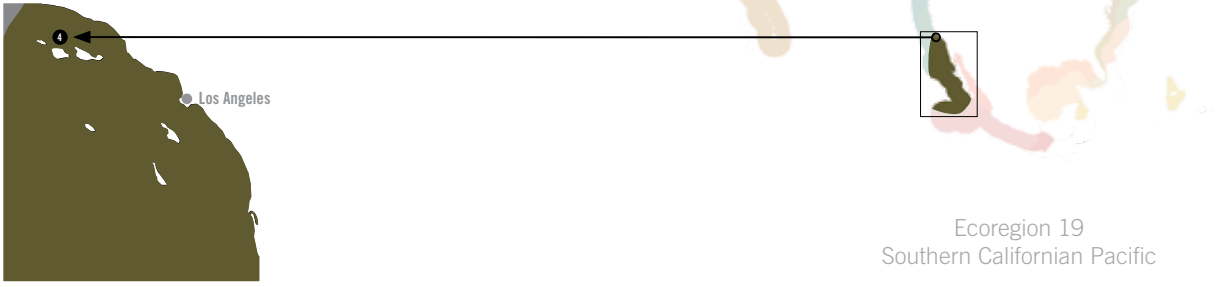
Water	Stressors	⌄
	Nutrient Health	–
	Human Health	–
	Human Activity	?
Habitat	Extent and Distribution	–
	Contaminants	?
	Human Activity	⌄
Living Resources	Biodiversity	?
	Extracted Species	?
	Alien Species	–
	Keystone and Indicator Species	–
	Focal Species	–
	Species of Common Concern	?
	Human Activities	⌃

For detailed answers and the basis for judgement for each question, go to: www.cec.org/nampan.

Photo: Gary E. Davis

MPA 4
California Channel Islands National Park (US)

This site contains a national park, a national marine sanctuary and 10 state and federal marine reserves. It includes five of the eight southern California islands and is located in the eastern Pacific Ocean, in the Southern California Bight, in Santa Barbara and Ventura counties. Marine life here ranges from microscopic plankton to the endangered blue whale. The area is well known for its kelp forests that harbor a thousand species of vertebrates, macroinvertebrates and plants, and other habitats, such as sea grass beds, rock reefs, rocky submarine canyons, pelagic waters, ocean upwelling zones, mud, sand and boulder benthos, deep basins (1,500 meters), coastal marshes and lagoons, sandy beaches, sea cliffs and rocky intertidal benches.



Ecoregion 19
Southern Californian Pacific

FACT SHEET

State(s) or province(s): California

Category: Channel Islands National Park, US National Park Service; Channel Islands National Marine Sanctuary, National Oceanic and Atmospheric Administration (NOAA)

Date established: Channel Islands National Park: 1938; Channel Islands National Marine Sanctuary: 1980

Area: Channel Islands National Park: 47,786 ha: Channel Islands National Marine Sanctuary: 381,384 ha

Human settlement: None

Population: The population in the areas adjacent to the Channel Islands has risen sharply over the last 20 years. As the number of people increases, so too does the number of park and sanctuary users. Recreational and tourist-related activities represent over 490,000 person-days within the Channel Islands National Marine Sanctuary.

Infrastructure: Visitor centers, trail systems, and piers. On Anacapa Island there is also a light station, and on Santa Cruz Island there are adobe ranch houses, barns, blacksmith and saddle shops, wineries and a chapel, from the 1800s and 1900s. Remains of military installations can be found on Santa Rosa Island.

Management authority: The State of California, NOAA Marine Sanctuary Program, US Department of Commerce, National Park Service, and US Department of the Interior manage this MPA cooperatively. The California Department of Fish and Game manages living marine resources within three nautical miles (five kilometers) of shore, and NOAA manages those resources beyond three miles (five kilometers).

Corresponding ecoregion: 19 – Southern California Pacific

Corresponding PCA: 17 – Upper California Bight/Channel Islands/San Nicolas Island

Description of the MPA: Channel Islands National Park encompasses five islands (Anacapa, Santa Cruz, Santa Rosa, San Miguel and Santa Barbara) and their ocean environment. The boundary of the Channel Islands National Marine Sanctuary begins at the mean high water line and extends seaward to a distance of approximately six nautical miles from the following islands and offshore rocks: San Miguel, Santa Cruz, Santa Rosa, Anacapa and Santa Barbara islands, and Richardson and Castle rocks.

Visitors' facilities: Visitors' centers, piers and campgrounds.

Website: www.nps.gov/chis/index.htm; http://channelislands.noaa.gov

ECOLOGICAL SETTING

Ecosystem diversity: The Channel Islands are home to over 2,000 species of terrestrial plants and animals. Like the Galapagos Islands of South America, isolation has allowed evolution to proceed independently on the islands. The waters around them combine warm and cool currents to create a unique breeding ground for many species of plants and animals.

Endemisms: 145 species, such as the night lizard and the island fox.

Focal species: Common dolphin, humpback whale, fin whale, blue whale, northern elephant seal, northern fur seal, California sea lion, harbor seal, California brown pelican, Xantus' murrelet, Cassin's auklet, and western gull.

Species of Common Conservation Concern: Humpback whale, gray whale (seasonally), blue whale (seasonally), Xantus' murrelet (increasingly), sea otter, right whale (rarely), Guadalupe fur seal (rarely), short-tailed albatross (rarely), pink-footed shearwater (rarely), and killer whale (regularly).

Human activities (inside the MPA or in surrounding areas): Hiking, camping, picnicking, backcountry camping, boating, kayaking, diving, snorkeling, fishing, surfing, whale watching, seal and sea lion watching, bird watching, and wildflower viewing.

Condition Assessment Scorecard

 **Water**	Stressors	
	Nutrient Health	
	Human Health	
	Human Activity	
 **Habitat**	Extent and Distribution	
	Contaminants	
	Human Activity	
 **Living Resources**	Biodiversity	
	Extracted Species	
	Alien Species	
	Keystone and Indicator Species	
	Focal Species	
	Species of Common Concern	
	Human Activities	

For detailed answers and the basis for judgement for each question, go to: www.cec.org/nampan.

Photo: Roberto Vazquez

MPA 10 Upper Gulf of California and Colorado River Delta Biosphere Reserve (Mexico)

Because of its ecological characteristics, high levels of biodiversity and great quantities of endemic species, the Upper Gulf of California and Colorado River Delta Biosphere Reserve is globally considered to be a unique and irreplaceable area. Forming part of the reserve, marine and terrestrial zones provide habitats for nesting, feeding, maturation, reproduction, or nursing the various species of birds, mammals, reptiles, and fish, some of which are considered to be at risk. Among them are the totoaba, vaquita porpoise, and several species of marine turtles.

FACT SHEET

State(s) or province(s): Baja California and Sonora

Category: Biosphere reserve

Date established: 1993

Area: 934,756 ha

Human settlement: Yes

Population: Seven towns lie within this protected area: Golfo de Santa Clara, El Doctor, Mesa Rica and Flor del Desierto in Sonora and Salinas de Ometepec, Playa Blanca and Playa Paraíso in Baja California. Golfo de Santa Clara is home to about 75 percent of the population.

Infrastructure: Offices, observation sites, and docks.

Management authority: Conanp (Comisión Nacional de Áreas Naturales Protegidas)

Corresponding ecoregion: 18 – Gulf of California

Corresponding PCA: 25 – Upper Gulf of California

Description of the MPA: The Upper Gulf of California and Rio Colorado River Delta Reserve is one-third terrestrial and two-thirds marine. This area is valuable to science, for tourism (increasingly), and as an economically important fishery.

Visitors' facilities: Sites for wildlife observation and piers.

Website: www.conanp.gob.mx

ECOLOGICAL SETTING

Ecosystem diversity: Eighteen marine mammal species, 315 bird species (terrestrial and aquatic), 149 fish species and at least 358 plant species (aquatic and terrestrial) have been reported for this MPA. More than 50 species are considered at risk or are on national and international conservation lists. These include the totoaba, vaquita and Yuma clapper rail. The Santa Clara and El Doctor marshes and Adair Bay are important resting areas for waterfowl. The variety of intertidal wetlands and the sandy and rocky coasts of coquina are important habitats for marine invertebrates and fish.

Endemisms: Totoaba, vaquita and more than 20 fish species, including the desert pupfish and gulf weakfish.

Focal species: Bottlenose dolphin, totoaba, vaquita, fin whale, minke whale, loggerhead turtle, green turtle and whale shark.

Species of Common Conservation Concern: Vaquita, loggerhead turtle, green turtle, humpback whale, blue whale, killer whale and gray whale.

Human activities (inside the MPA or in surrounding areas): Commercial fishing is the main activity within this MPA, with blue shrimp, corvina, northern milkfish, sierra, manta ray, guitarfish, shark, crab and clam the main species targeted. In the surrounding areas, inhabitants are engaged in agriculture, forestry, mineral extraction and cattle raising. Tourism is also an important activity in this MPA.

Condition Assessment Scorecard

 **Water**	Stressors	
	Nutrient Health	
	Human Health	
	Human Activity	
 **Habitat**	Extent and Distribution	
	Contaminants	
	Human Activity	
 **Living Resources**	Biodiversity	
	Extracted Species	
	Alien Species	
	Keystone and Indicator Species	
	Focal Species	
	Species of Common Concern	
	Human Activities	

For detailed answers and the basis for judgement for each question, go to: www.cec.org/nampan.

Photo:
Chris Johnson/EarthOCEAN

APPENDIXES

Photo: Luis Bourillon

APPENDIX A DRAFT LETTER OF INVITATION TO A SCORECARD WORKSHOP

Dear **[insert name of invitee]**:

On behalf of the **[insert site name]**, I am pleased to invite you to a workshop to be held {insert dates}. In asking you to attend, I am also asking you to draw on your expertise and knowledge of evidence in order to develop a condition assessment scorecard for **[insert site name]**. The workshop will be held at **[insert specific venue]**.

In 1998 the Commission for Environmental Cooperation (CEC) established the North American Marine Protected Areas Network (NAMPAN), a committee of experts that includes representatives from Canada, the United States and Mexico. NAMPAN has made progress on important issues, such as identifying marine species of common conservation concern, and mapping marine ecoregions and priority conservation areas within these regions.

Its most recent initiative is an effort to use ecological scorecards as a basis for promoting consistent approaches to monitoring and reporting on monitoring efforts by marine protected areas along the coasts of North America. A pilot project indicated that scorecards possess considerable promise as a tool to improve science and evidence-based ocean stewardship, to increase civic engagement in ocean conservation, and to advance understanding of ecosystem health. When expanded NAMPAN-wide, these scorecards have the capacity to help build a community of practitioners, to encourage shared monitoring of common ocean health indicators, and to improve understanding of ocean ecosystems, biodiversity, and human interactions with nature.

In support of this, the CEC and NAMPAN sponsored a number of workshops in recent years to identify current monitoring programs, sources of monitoring data and the indicators used for reporting on the health of marine protected areas, and to explore the use of condition assessment scorecards as a means of reporting on the health of marine protected areas. NAMPAN has developed a suite of questions that relate to 12 different aspects of ecological health. The process of addressing the questions is evidence-based and is completed in a workshop format, drawing on a relatively small panel of experts familiar with scientific, traditional and community knowledge.

By participating in the workshop, you have an opportunity to establish a scorecard for **[insert site name]**. The lines of evidence you and others provide will need to support each of the 12 questions. Where participants find the evidence insufficient, no scoring will be possible. By agreeing to participate, you are being asked to provide your judgment for each of the 12 questions on the basis of evidence, evidence that you will be asked to identify and share at the workshop. The judgments of all experts will be reflected in a predetermined set of responses that identify both the state and trends associated with key aspects of ecosystem health at **[insert site name]**.

Please find attached a copy of the questions, a draft agenda for the workshop and an outline of a scorecard. To obtain more details about the condition report and scorecard process, please visit www.cec.org/nampan.

I would ask that you please let me know by **[insert deadline]** whether you are able to attend. I hope you will be able to participate, and look forward to your earliest response.

Sincerely,

[insert name and title of site manager]

APPENDIX B DRAFT AGENDA FOR A SCORECARD WORKSHOP

Day one

9:00	**Opening and introductions**
9:15	**Purpose of the meeting** **Overview of the NAMPAN scorecard initiative (PPT 1)** How we got here Why a scorecard? Expectations for the day How the results will be used? What next?
9:30	**Brief introduction to the site being assessed** About the site: Review of basic information important to the scorecard What are the management objectives for the site? What human activities could influence ecological health?
10:00	**The marine ecological scorecard methodology (PPT 2)** Overview of method What is **state/condition**? What is a **trend**? What role does expert judgment have?
10:30	Break
10:45	**Water (PPT 3)** 1 To what extent do human activities influence water quality and inputs, and how are they changing? 2 To what extent do altered nutrient loads affect ecosystem health, and how are they changing? 3 To what extent do water conditions pose risks to human health, and how are they changing?
12:00	Lunch
13:00	**Water** (continuation)
14:00	**Habitat** 4 To what extent do human activities influence habitat extent and quality, and how are they changing? 5 To what extent do contaminants in habitats or the food web affect living resources or water quality, and how are they changing? 6 To what extent does habitat alteration, including the extent and distribution of major habitat types, affect ecosystem health, and how is it changing?
17:00	Close

Day two

9:00	**Living Resources** 7 To what extent do human activities influence living resource quality, and how are they changing? 8 What is the status of biodiversity, and how is it changing? 9 What is the status of extracted species, and how is it changing?
10:30	Break
10:45	**Living Resources** (continuation) 10 What are the status and condition of key species, and how are they changing? 11 What are the status and condition of species at risk, and how are they changing? 12 What is the status of alien species, and how is it changing?
12:00	Lunch
13:00	**Living Resources** (continuation)
15:45	Break
16:00	**Next steps, deadlines, who else should be involved**
16:15	**Workshop evaluation**
16:30	Close

APPENDIX C POWERPOINT PRESENTATIONS

The following presentations are available, in electronic version only, at www.cec.org/nampan.

Introduction: Towards an Integrated Reporting System for Marine Protected Areas in the Baja to Bering Sea Region (B2B) (PPT 1)
Methodology overview: Developing Marine Ecological Scorecards (PPT 2)
The Scorecard Questions (PPT 3)

APPENDIX D TRACKING THE EVIDENCE FORM

Tracking the Evidence

Participant's name: _____

Question theme/number: _____

References and/or evidence cited: _____

APPENDIX E ACKNOWLEDGMENTS

The CEC is grateful for the many valuable contributions of knowledge and experience generously received from experts throughout the development and review process. In particular, the CEC would like to thank Douglas Hyde, Gary E. Davis and Luis Fueyo for their contribution to this process.

Here we list, among those experts, the participants in the 10 initial MPA scorecard workshops.

Participants in the 10 Initial MPA Scorecarding Workshops

Canada

Pacific Rim National Park Reserve

Heather Holmes, Pacific Rim National Park Reserve, Parks Canada; Ed Paleczny, Pacific Rim; Bob Redhead, Pacific Rim; Anne Stewart, Bamfield Marine Sciences Centre; Ron Tonasichuk, Pacific Biological Station, Fisheries and Oceans Canada (DFO); Rebecca Vines, Clayoquot Sound Biosphere Reserve; Jennifer Yakimishyn, Pacific Rim; Yuri Zharikov, Pacific Rim

Reviewers: Katie Beach, biologist, Nuu-chan-nulth Fisheries; Charlie Cootes, Uckucklesaht First Nation; Jim Darling, researcher, West Coast Whales; Andrew Day, West Coast Aquatic Management Board; Robert Dennis, Huu-ay-aht First Nation; Eli Enns, Tla-o-qui-aht First Nation; John Ford, marine mammal specialist, DFO; Lisa Gallic, Tseshaht First Nation; Graham Gillespie, biologist, Shellfish Division, Pacific Biological Station, DFO; Glen Jamieson, DFO; Kate Ladell, DFO; David Lightly, Tseshaht First Nation; Anne Morgan, Toquaht First Nation; Bob Mundy, Ucluelet First Nation; Rich Palmer, director, Bamfield Marine Sciences Center; Stella M. Peters, Huu-ay-aht First Nation; Cliff Robinson, scientist, Western and Northern Service Center, Parks Canada; Tina Robinson, Uckucklesaht First Nation; Mark Saunders, DFO; Greg Thomas, DFO; Jack Thompson, Ditidaht First Nation; George Williams, Ditidaht First Nation

Race Rocks Ecological Reserve

Garry Fletcher, Race Rocks

Reviewers: Doug Biffard, Parks and Protected Areas Branch, BC Ministry of Environment; Chris Blondeau, Lester B. Pearson College; Glen Jamieson, DFO; Kate Ladell, DFO; Glen Rasmussen, DFO; Mark Saunders, DFO; Greg Thomas, DFO; Pam Thurringer, Archipelago Marine; Laura Verhegge, teacher, Lester B. Pearson College

Mexico

Isla Guadalupe Biosphere Reserve

Lucia Barbosa Devéze, *Comisión Nacional de Áreas Naturales Protegidas* (Conanp) *Reserva de la Biosfera Isla Guadalupe*; Luis Estrada, *Cooperativa Abuloneros y Langosteros*; Ana Luisa Figueroa, *Conanp Reserva de la Biosfera Isla San Pedro Mártir*; Juan Pablo Gallo R., *Centro de Investigación en Alimentación y Desarrollo* (CIAD); Jaqueline García, CIAD–Guaymas; Erick C. Oñate González, *Centro de Investigación Científica y de Educación Superior de Ensenada* (CICESE); Norma A. Hernández R., *Secretaría de Marina* (Semar); Alejandro Hinojosa, CICESE; Alfonso Aguirre Muñoz, *Grupo de Ecología y Conservación de Islas* (GECI); Edgar Mauricio Hoyos Padilla, *Centro Interdisciplinario de Ciencias Marinas* (Cicimar); Mario Ramade, *Federación Regional de Sociedades Cooperativas* (Fedecop); Araceli Samaniego, GECI; Luis Roberto Martínez Santos, *Conanp Reserva de la Biosfera Isla Guadalupe*; Oscar Sosa, CICESE

Photo: Rurik List

Mexico (continued)

National Park Bahia de Loreto

Eduardo Balart, *Centro de Investigaciones Biológicas del Noroeste* (Cibnor); Héctor García, Cicimar; Martha Haro, Cibnor; Diane Hendron, Cicimar; Leonardo Huato, Cibnor; Roberto López Espinosa de los Monteros, Conanp; Jossué Navarro, Conanp; Irving Ramírez, Conanp; Jesús Rodríguez Romero, Cibnor

San Pedro Martir Island Biosphere Reserve

Diana Crespo, World Wildlife Fund (WWF); Ana Luisa Figueroa, *Conanp Isla San Pedro Mártir*; Juan Pablo Gallo R., CIAD; Jaqueline García, CIAD–Guaymas; Tad Pfister, Prescott College; Araceli Samaniego, GECI; Jorge Torre, *Comunidad y Biodiversidad A.C.* (Cobi); Jesús Ventura Trejo, *Conanp Islas del Golfo*

El Vizcaíno Biosphere Reserve

Avril Acevedo, Conanp; Benito Bermúdez, Conanp; R. Carmona, UBCS; Ramón Castellanos, Conanp; Francisco Cota, Conanp; Raúl Abraham Mayoral, fisherman, *Cooperativa Buzos y Pescadore*; Alonso Murillo, fisherman; María Teresa Sánchez, *Gobierno del Estado de Baja California Sur*; José Miguel Suárez, Conanp; Héctor Toledo, Conanp; José de Jesús Varela, advisory board

Upper Gulf of California and Colorado River Delta Biosphere Reserve

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A Guide to Ecological Scorecards

for Marine Protected Areas in North America

This guide is an introduction to the use of marine ecological scorecards and condition reports, which are tools for assessing the condition of marine protected areas in North America. Marine protected areas (MPAs) are managed marine and coastal areas of ecological significance, featuring species and/or properties which require special consideration. Managing these areas effectively helps conserve marine biodiversity in critical marine habitats.

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