Ecological Scorecards: A Powerful Communication Tool Capable of Distilling Complex Technical Information into a Format Useable by Many

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PRESENTATION OUTLINE

- What is an ecological scorecard?
- Why have they been developed?
- Where have they been developed?
- How are they developed?
- How are they being used?
- How can they be used in the future?

What is an ecological scorecard?

They are a *reporting tool*, taking complex existing monitoring data and providing stakeholders with an easy to understand value judgment and assigning a trend by answering 14 Questions in thematic areas covering Water Quality, Habitat, Living Marine Resources, and Human Activities. These value judgments and trend analyses are developed and assigned through a consensus of expert opinion. Scorecards are revisited ~ 5 years.

Why have they been developed?

North American Free Trade Agreement (Jan. 1, 1994)

Tratado de Libre Comercio de América del Norte

Accord de libre-échange nord-américain

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North American Agreement on Environmental Cooperation

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Commission on Environmental Cooperation (Montreal, Canada)

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North American Marine Protected Areas Network (NAMPAN)

Goal of NAMPAN - work with a tri-national, multi-sectoral group of stakeholders to establish an effective system of North American MPA networks that enhances and strengthens the protection of marine biodiversity.

NAMPAN Agencies

Mexico

- Comision Nacional de Ares Naturales Protegidas (Lead)

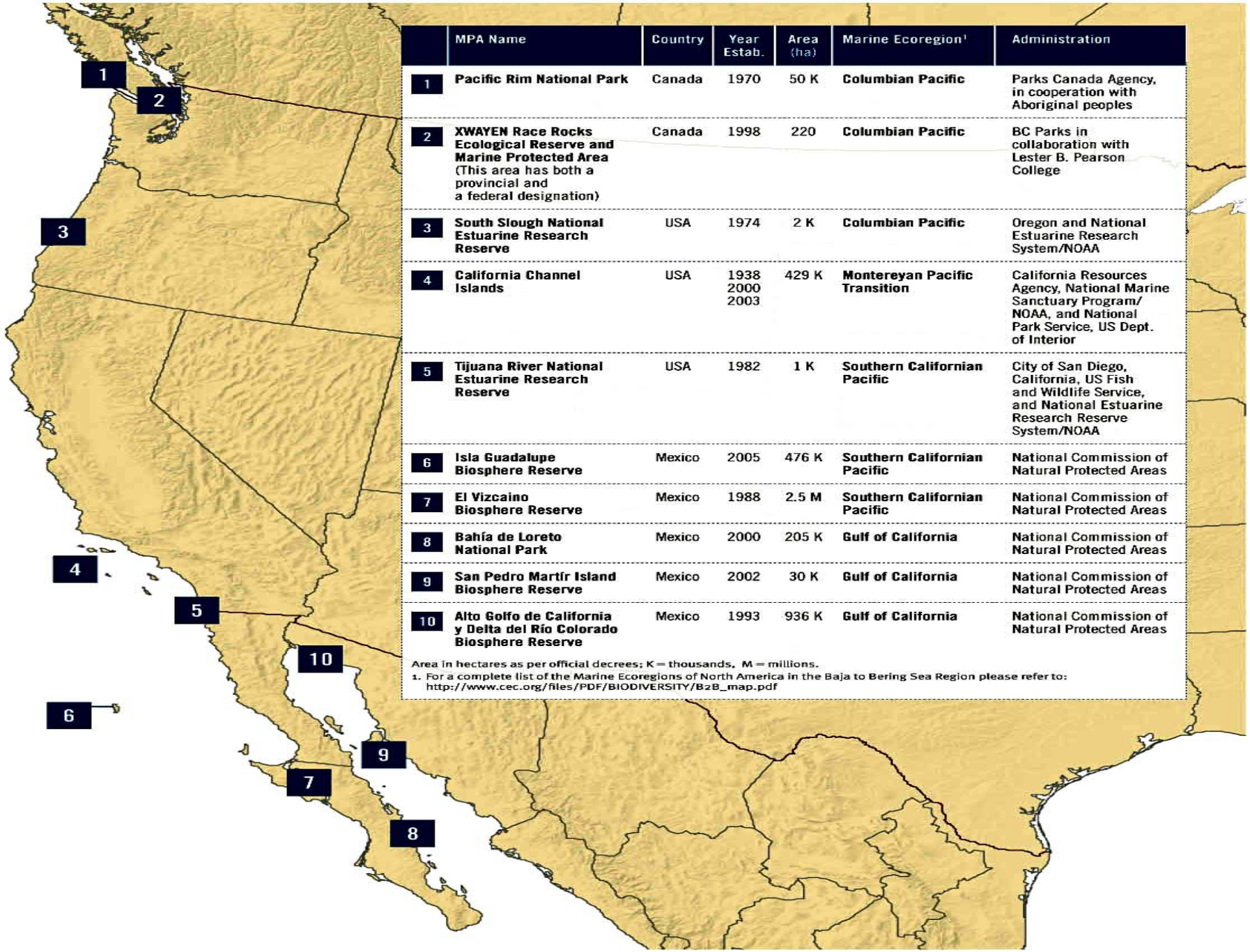
USA

- Department of Commerce, NOAA (Lead), Marine Sanctuaries, Estuarine Research Reserves, Fisheries Management Areas
- Department of the Interior – National Parks, National Wildlife Refuges
- State and Territorial Partners
- Tribes and Other Indigenous Peoples

Canada

- Parks Canada/Parcs Canada (Lead) – National Parks
- Fisheries and Oceans/Peches et Oceans Canada – "MPAs"
- Environment/Environnement Canada
- Provincial and Territorial partners
- First Nations

Map: Marine Protected Areas Selected to Evaluate the NAMPAN Ecological Scorecard Process



	MPA Name	Country	Year Estab.	Area (ha)	Marine Ecoregion[1]	Administration
1	**Pacific Rim National Park**	Canada	1970	50 K	**Columbian Pacific**	Parks Canada Agency, in cooperation with Aboriginal peoples
2	**XWAYEN Race Rocks Ecological Reserve and Marine Protected Area** (This area has both a provincial and a federal designation)	Canada	1998	220	**Columbian Pacific**	BC Parks in collaboration with Lester B. Pearson College
3	**South Slough National Estuarine Research Reserve**	USA	1974	2 K	**Columbian Pacific**	Oregon and National Estuarine Research System/NOAA
4	**California Channel Islands**	USA	1938 2000 2003	429 K	**Montereyan Pacific Transition**	California Resources Agency, National Marine Sanctuary Program/ NOAA, and National Park Service, US Dept. of Interior
5	**Tijuana River National Estuarine Research Reserve**	USA	1982	1 K	**Southern Californian Pacific**	City of San Diego, California, US Fish and Wildlife Service, and National Estuarine Research Reserve System/NOAA
6	**Isla Guadalupe Biosphere Reserve**	Mexico	2005	476 K	**Southern Californian Pacific**	National Commission of Natural Protected Areas
7	**El Vizcaino Biosphere Reserve**	Mexico	1988	2.5 M	**Southern Californian Pacific**	National Commission of Natural Protected Areas
8	**Bahía de Loreto National Park**	Mexico	2000	205 K	**Gulf of California**	National Commission of Natural Protected Areas
9	**San Pedro Martír Island Biosphere Reserve**	Mexico	2002	30 K	**Gulf of California**	National Commission of Natural Protected Areas
10	**Alto Golfo de California y Delta del Río Colorado Biosphere Reserve**	Mexico	1993	936 K	**Gulf of California**	National Commission of Natural Protected Areas

Area in hectares as per official decrees; K = thousands, M = millions.

1. For a complete list of the Marine Ecoregions of North America in the Baja to Bering Sea Region please refer to: http://www.cec.org/files/PDF/BIODIVERSITY/B2B_map.pdf

HOW ARE ECOLOGICAL SCORECARDS DEVELOPED?

THE SCORECARD PROCESS

Assemble all available scientific information on selected MPA

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Assemble all available topical subject experts familiar with the data and/or MPA area

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Subject experts make judgments about the data by answering the questions

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Value and trend for each question are assigned based on expert judgment opinion

EXAMPLE OF NAMPAN SCORECARD QUESTION

Question 9. (Living Resources/Extracted Species). What is the status of extracted species and how is it changing?

SCORECARD VALUE JUDGMENTS

Superior ★★★★★
Good ★★★★
Fair ★★★
Poor ★★

TREND ANALYSIS

Rapidly Improving
Improving
Stable
Diminishing
Rapidly Diminishing
Undetermined

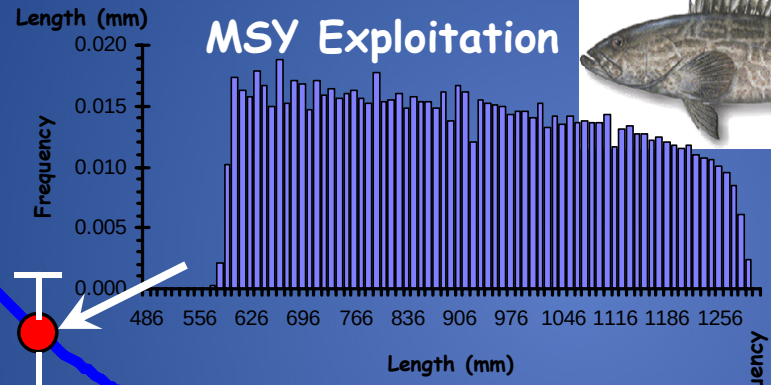
"Observable" Assessment Indicator Variable

$$\bar{L}(t) = \frac{F(t)\int_{a_c}^{a_\lambda} N(a,t)\, L(a,t)\, da}{F(t)\int_{a_c}^{a_\lambda} N(a,t)\, da}$$

Lightly Exploited

40.6", 42.8 lbs
SPR = 100%

MSY Exploitation



36.4", 30.1 lbs
SPR = 35.1%

Current Exploitation

27.9", 12.8 lbs
SPR = < 5%

Good?

Fair?

Poor?

Average Size (TL, mm)

1100
1000
900
800
700
600

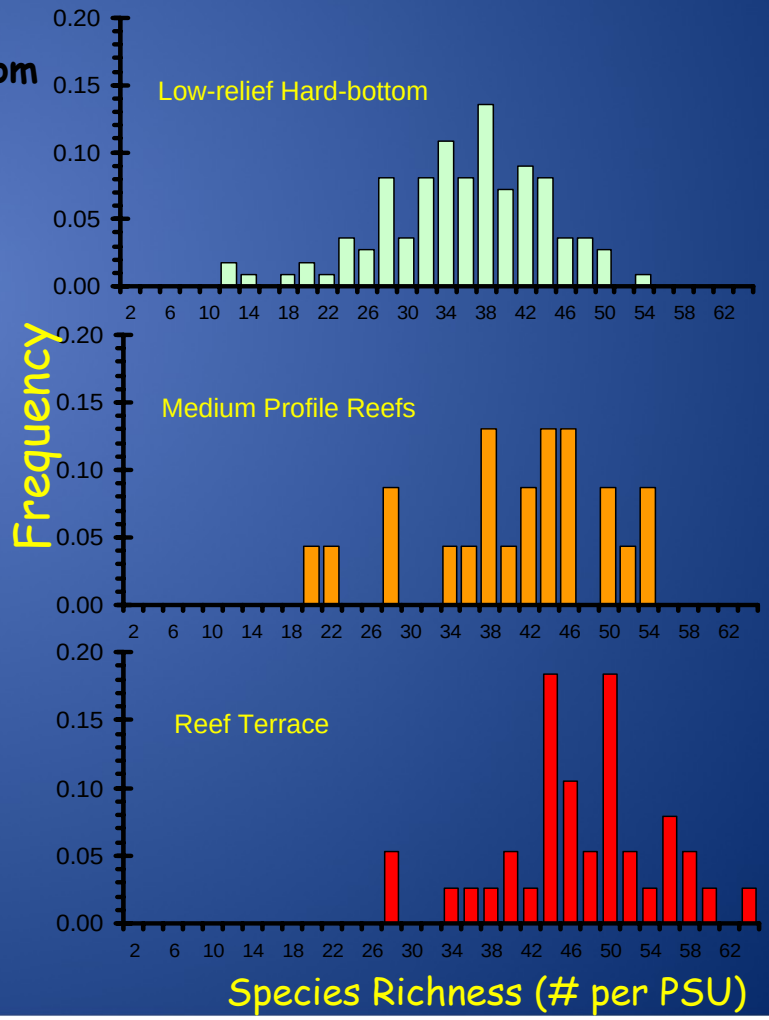
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1.0 1.1 1.2

Minimum Legal Size
(24 inches)

Fishing Mortality Rate

Question 8. What is the status of biodiversity and how is it changing? (mean number of fish species observed in primary survey units during annual survey by habitat type)

- Superior = > 95% of maximum observed value
- Good = 90 to 95%
- Fair = 80 to 90%
- Poor = 70 to 80%



Question 13. What is the status and condition of species of common concern (% of primary survey units with observed turtles)?

Superior = > 15%
Good = 10 to 15%
Fair = 5 to 10%
Poor = 1 to 5%

How are they being used? How can they be used?

Ecological scorecards are used as a *communication tool*, requiring groups to pool data, expertise, and discuss in order to develop a final product that can be used by technical and non-technical audiences alike. They are a *reporting tool*, taking complex monitoring data and providing stakeholders with an easy to understand value judgment and assigning a trend. They are a *collaborative tool*, offering stakeholders and managers the opportunity to take actions necessary to improve the value judgments on the next reporting cycle. They are an *information gap tool*, identifying areas of monitoring that are either insufficient to make an informed value judgment or nonexistent.

Some future NAMPAN activities…

- Expand the B2B (Baja to Bering) to the A2C (Atlantic to Caribbean) and Great Lakes
- Undertake an **ICES Study Group on Designing Marine Protected Area (MPA) Networks in a Changing Climate** (Chaired by: Robert J. Brock, USA, Ellen Kenchington, Canada, and Amparo Martinez, Mexico). Meeting 15-19 November 2010, Woods Hole, Massachusetts, USA.

QUESTIONS?

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