



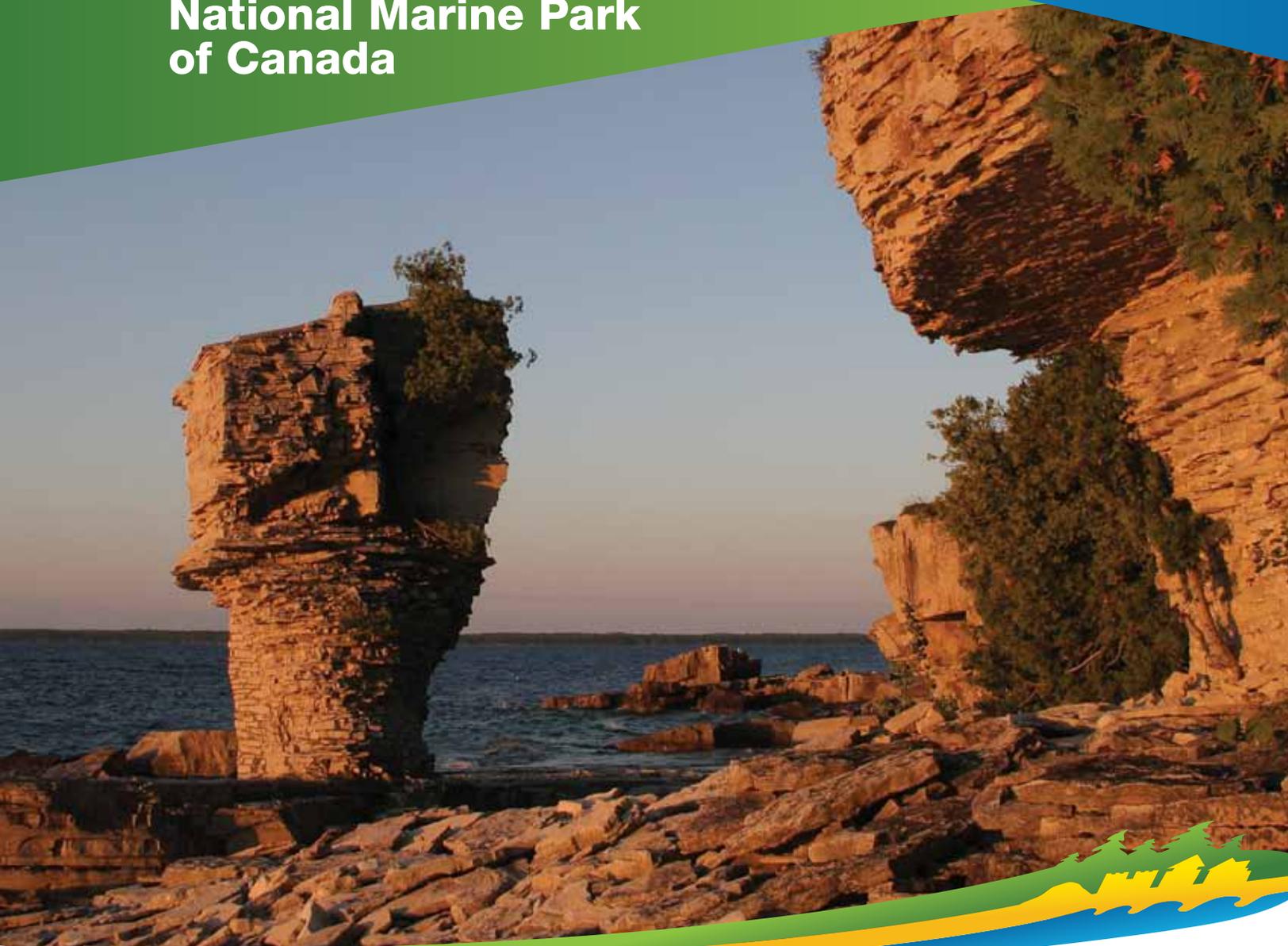
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State of the Park Report 2010

Fathom Five National Marine Park of Canada



Canada 

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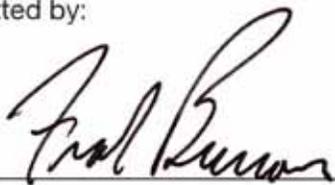
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Cover Image: Flowerpot Island at Fathom Five National Marine Park. Photo Credit: Scott Currie

**STATE OF THE PARK REPORT
FATHOM FIVE NATIONAL MARINE PARK OF CANADA**

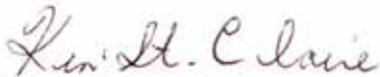
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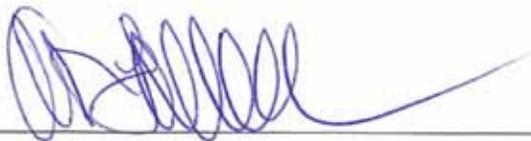
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EXECUTIVE SUMMARY

Parks Canada delivers its national marine conservation area (NMCA) program through an integrated mandate that underscores a responsibility to 'protect and present'. This is held as a public accountability and requires periodic reporting. To this end, the State of the Park Report for Fathom Five National Marine Park assesses the condition and trends of measures and indicators related to resource conservation, visitor experience, and public appreciation and understanding. This report also provides analysis and context for the management planning process.

Many of the indicators and measures have changed since the first State of the Park Report. In some cases this reflects a response to corporate needs and in other cases data availability. A summary of the indicators are provided in Table 1. In brief, the ecological indicators are in a mixed state similar to more comprehensive lake wide observations. Coastal ecosystems are rated in good condition, whereas islands and offshore ecosystems are fair and appear to be in flux (e.g., invasive species, climate change, etc.). The species at risk indicator could not be rated at this time. The four cultural resource indicators, including submerged and terrestrial resource condition, submerged and terrestrial resource management practices are rated as fair. Visitor experience and public appreciation and understanding indicators could not be rated at this time as no explicit study or analysis has been completed. However, insights from Bruce Peninsula National Park's social science study and analysis suggests that these indicators may be good and improving.

Performance ratings for Fathom Five are summarized in Figure 1 and indicate that many of the expectations from the 2005/06 Parks Canada Corporate Plan can not be reported due to a lack of social science data. However, outcomes from the 1998 Park Management Plan indicate that many of the commitments have been achieved.

The key issues facing Fathom Five are related to uncertainties with respect to governance and ownership of the park. Important steps, such as the transfer of the lakebed and shipwrecks from Ontario to Canada have not yet occurred. Key issues include the need to focus on ecological sustainability, cultural resource management, the relationship with the Saugeen Ojibway Nations, and the significant knowledge gap in social science research for the park.

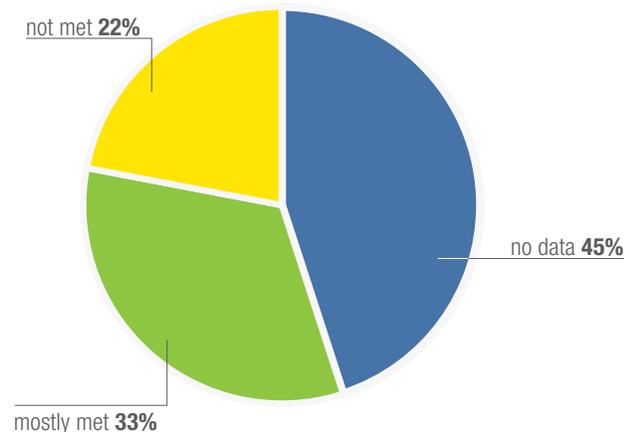


FIGURE 1
Rating for Fathom Five in Achieving 2005 Parks Canada Performance Expectations

TABLE 1
State of the Park Summary

INDICATOR	STATE	RATIONALE
Resource Conservation – Ecological		
Coastal Ecosystem		Coastal wetland water quality, lake levels, coastal fishes and coastal connectivity are in good condition. Stable trends are reported for coastal wetland water quality and lake levels. No trend reported for coastal fishes and coastal connectivity. Aquatic plant communities are not rated.
Islands		Alvar quality is good and habitat connectivity is fair. Colonial waterbirds have been stable in the past four years, however, thresholds and trends for this measure are still under development. No trends are available.
Offshore Ecosystem		This ecosystem has undergone a dramatic change in the 20th century from over-fishing and invasive species. Water quality still ranks as good, though decreasing. Lake trout is beginning to show signs of recovery and was assessed as fair. Ice cover measure remains in poor condition and stable due to adverse effects of climate change.
Species at Risk		Little information is available on the condition and trend of the twelve COSEWIC species at risk within Fathom Five. Only the Eastern Massasauga Rattlesnake has received direct management action.
Resource Conservation – Cultural Resources		
Resource Condition Submerged and Terrestrial		Submerged cultural resources (shipwrecks) are in fair condition and deteriorating at a natural and expected rate. No trends are available. Although terrestrial archaeological sites have received little attention their condition remains as fair. Buildings, structures, landscapes and landscape features are not rated. Objects (artefacts) are in good condition. No trends are available.
Resource Management Practices Submerged and Terrestrial		Inventory, assessment and monitoring efforts of submerged cultural resources are considered in fair condition. Inventory and monitoring of terrestrial resources have received little effort and are considered in poor condition. A management strategy is absent and therefore is not rated. No trends are available.
Visitor Experience		
Visits		Attendance has increased since the opening of the Visitor Centre in 2006, however, as a measure it remains not rated given the lack of thresholds and method to distinguish between visitors to Fathom Five and Bruce Peninsula National Park. Satisfaction and marketing efforts also remain not rated.
Learning		Although attendance to interpretive activities has increased since 2006 primarily through the Visitor Centre, a decline in attendance in traditional staff-guided programs has also occurred. Measures of learning activities, including attendance, learning opportunities, and satisfaction remain not rated.
Enjoyment		Measures to assess visitor enjoyment, including extent, services, activities, and with staff are not rated. Enjoyment with facilities, particularly the Visitor Centre, is good.
Satisfaction		Measures to assess overall satisfaction and satisfaction with fees are not rated.
Meaning		A measure of meaning, of connection to place, is not rated.
Public Appreciation and Understanding		
Appreciation and Understanding		This indicator is not rated. However, there has been an overall increase in the number and quality of opportunities to facilitate appreciation and understanding among a wider range of audiences.
Support		This indicator is not rated. However, there appears to be an increase in support for Fathom Five through stakeholder and community involvement. The need for a comprehensive strategy is recognized.

CONDITION				TREND			
Good	Fair	Poor	Not rated	Improving	Stable	Declining	Not rated

Note: Refer to Appendix 1 for definitions related to condition and trend

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1

Introduction

PURPOSE

The purpose of the State of the Park Report (SoPR) is to:

- Provide a snapshot of the state of the park;
- Report the park's achievement in meeting its performance expectations, as well as its contribution to the Agency's strategic outcome;
- Report the results of the park's efforts to maintain or improve the state of the park since the last management plan; and
- Identify key issues facing the park for consideration in management planning.

Fathom Five National Marine Park

Fathom Five came about as an addition while negotiations were taking place for establishment of Bruce Peninsula National Park. Fathom Five National Marine Park had originally been a provincial marine park established in 1972 primarily to protect 27 known shipwrecks and regulate diving in a 114 km² area.

On the surface, Fathom Five is known for its cold clear waters, picturesque shorelines, numerous islands and escarpment landscapes. Recreational boating, sport fishing, sightseeing cruises, snorkling and scuba diving are common uses. Commercially, there is a fishery (primarily lake whitefish), and the *M.S. Chi-Cheemaun* ferry transports approximately 250,000 passengers annually between the Bruce Peninsula and the south shore of Manitoulin Island.

Scuba diving and visits to Flowerpot Island are the two most popular activities in Fathom Five with over 40,000 visitors to Flowerpot each year and approximately 3,500 registered divers.

The local tour boat and diving charter industries thrive with the onset of the summer months as visitors find their way to the quaint village of Tobermory. The Visitor Centre serves as a gateway to the park and orients visitors to the marine heritage of Fathom Five. A 20 metre tower offers visitors a stunning panoramic view of the tip of Bruce Peninsula and the islands of Fathom Five.

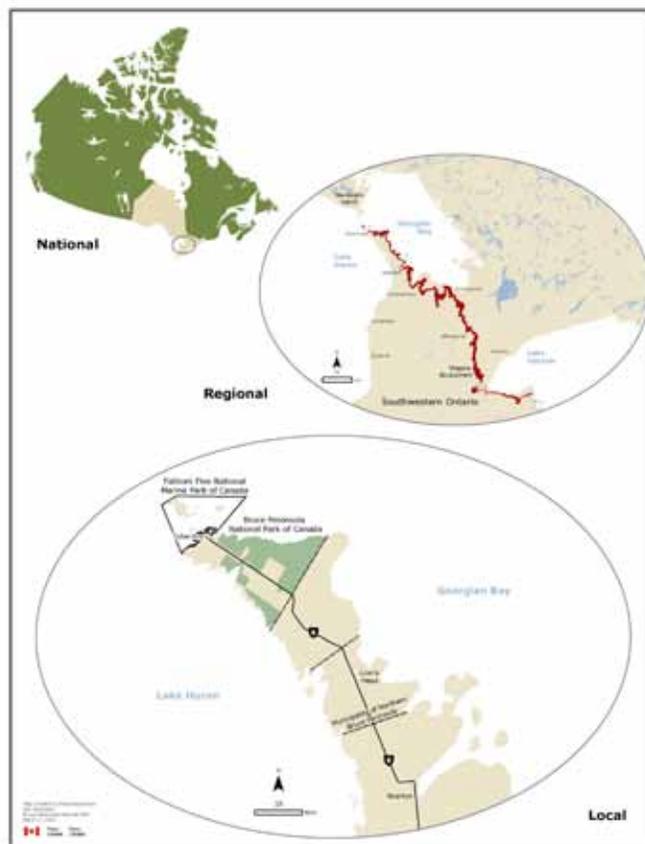


FIGURE 2
Location of Fathom Five National Marine Park

Below the surface, another story unfolds. This “sweetwater sea” is in flux. In the 1940’s, overharvest coupled with the introduction of the sea lamprey, rainbow smelt and alewife destabilized the ecosystem, and by 1959, lake trout populations had collapsed. In the 1990’s zebra and quagga mussels appeared and the recent shift in nutrient flow and a crash in the benthic invertebrate *Diporeia* sp. appears to be related to them. Viral hemorrhagic septicemia (VHS), is the newest assault to the lake ecosystem and as with other introduced species has the potential to significantly alter food web dynamics in an already unstable ecosystem.

Coastal wetlands are highly productive and biologically rich areas and play a significant and disproportionate role in the ecology of the area. These areas are used for spawning, nursery, and adult habitat of some 30-40 species of fishes, which are then preyed upon by other species including terns, raccoons and water snakes. Although climate change may prove to have the most profound impact on coastal wetlands, Eurasian watermilfoil has been found in a few areas since the early 1980’s, and forms dense mats, muscling out native species, affecting circulation and impacting water quality. Zebra and Quagga mussels have been observed since 1992. These efficient filter feeders, move considerable suspended material from the water column to the lakebed. Their waste affects water quality and increases nutrients for algae growth creating favourable conditions for Type E botulism, a known contributor to bird mortality. Round gobies, first observed in 2005 in Fathom Five, can dominate the coastal lakebed and impact native benthic fishes (e.g., sculpin and darter) and crayfish and prey on other fish eggs such as lake trout and whitefish.

Lake Huron Facts

- Part of the world’s largest freshwater ecosystem, the Laurentian Great Lakes.
- Four separate but interacting bodies of water: Georgian Bay, the North Channel, Saginaw Bay, and the Main Basin.
- The 5th largest lake by surface area and 6th by volume in the world.
- Water retention time is 22 years.
- Thunder Bay National Marine Sanctuary (Alpena, MI) is the only US Great Lakes Marine Sanctuary.
- Total human population of basin is 2,694,154.

Ecosystem change is the “new norm” as Fathom Five assesses ecosystem structure and function against a moving baseline. The fact that this part of the marine region is being assessed – renders Fathom Five the canary in the coal mine and an early warning system for the upper Great Lakes. This has the potential to promote the relevance and importance of National Marine Conservation Areas (NMCA) for monitoring conservation and social well-being in a complex social-ecological system.

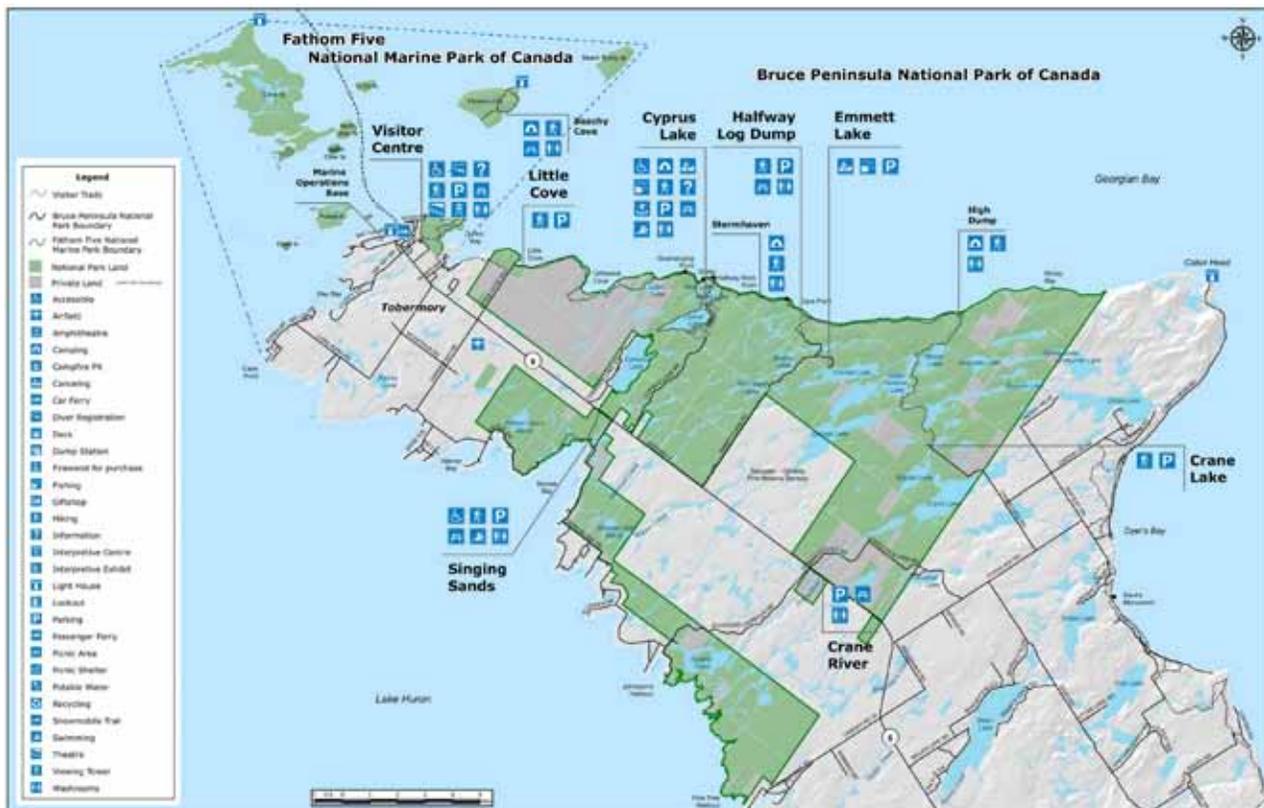


FIGURE 3

Map of Fathom Five National Marine Park and Bruce Peninsula National Park

2

First Nations Context

FIRST NATIONS CONTEXT

Fathom Five is within the traditional territory of two First Nations. The Chippewas of Nawash Unceded First Nation, is located approximately 70 km southeast of the Fathom Five near Wiarton, Ontario and the Chippewas of Saugeen First Nation, is located 85 km to the southwest, near Southampton, Ontario. When working together on matters of mutual interest they are collectively identified as the Saugeen Ojibway Nations. In the former St Edmunds Township, they share a Hunting Reserve that is surrounded on three sides by Bruce Peninsula National Park.

The Saugeen Ojibway Nations and the federal and provincial governments have unresolved matters related to the interpretation of earlier treaties, in particular Treaty 45 ½ (1836) and Treaty 72 (1857) on the issues of unsold, surrendered lands on the peninsula and on hunting and fishing rights on surrendered lands. In 1994, the Saugeen Ojibway Nations began litigation in Superior Court of Ontario, challenging the validity of Treaty 72 and suing for compensation, along with the return of federal and provincial lands, including those lands being assembled for the national park. In 2003, the Saugeen Ojibway Nations filed a second litigation, claiming Aboriginal title to the lakebeds and waters of Lake Huron and Georgian Bay.

When Bruce Peninsula National Park and Fathom Five National Marine Park were established on July 20, 1987 under a Federal-Provincial Agreement signed between Ontario and the Government of Canada, limited discussion took place with Saugeen Ojibway Nations. The first management plans for both parks were approved in 1998 with limited direct Saugeen Ojibway Nations engagement. First Nations' input to decisions was sought mainly through the Park Advisory Committee, in concert with other partners on this

committee. When the courts began defining "consultation" more clearly, the Saugeen Ojibway Nations withdrew from participation in the Park Advisory Committee because they did not want their attendance at meetings to be construed as formal consultation.

The park has organized a special workshop dealing with relationship building and information sharing around Species at Risk, held at the Chippewas of Nawash in January 2009. Joint natural resource inventory and data sharing about species at risk has also taken place. The new Visitor Centre contains many cultural elements linked to First Nations and First Nations people have been hired to conduct interpretive programs with Aboriginal content.



Aboriginal man with fishing net
Photo Credit: Parks Canada

Specific employment and economic opportunities within the parks has been directed to Saugeen Ojibway Nations. Consistently the park staff roster has included Saugeen Ojibway Nations members. Supporting training programs and career progression has led to full-time permanent employment for several members. Saugeen Ojibway Nations economic opportunities have included contracting for services, and on occasion Aboriginal set aside contracts through the federal government Procurement Strategy for Aboriginal business, have been awarded to Saugeen Ojibway Nations companies (e.g., the Visitor Center road). Entry fees to the national parks are waived for Saugeen Ojibway Nations members and park facilities such as the cabins at Emmett Lake Research Station have been provided at no charge.

More recently, new talks have started that are aimed at building better relationships. The two First Nations were invited to put forward a work plan and budget that would allow “partnership” discussions to occur around Parks Canada’s corporate priorities such as employment, socio-economic opportunities, resource protection, interpretation and cultural heritage protection. A draft partnership agreement includes items such as cross-cultural training of employees, increased employment of First Nations people, shared natural resource inventory efforts, and site visits to places such as other national parks with similar challenges and opportunities to understand the potential of good working relationships.

Parks Canada and Saugeen Ojibway Nations have signed a Memorandum of Understanding concerning formal management plan consultation and will also look at ways of developing a formalized Aboriginal Advisory relationship with the park.



FIGURE 4
Map of Traditional Territories



Making birch bark canoe Photo Credit: Parks Canada



First Nations drummers Photo Credit: Willy Waterton

3

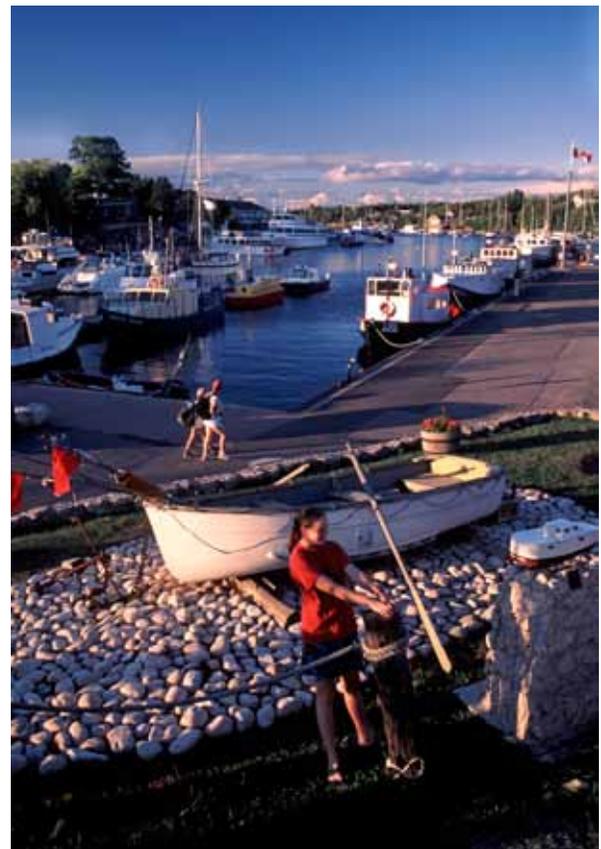
Coastal Communities Context

COASTAL COMMUNITY

Coastal communities adjacent to Fathom Five include the village of Tobermory and rural residential development. The resident population is approximately 500 and increases seasonally to 2,500. There is very little occupation of the islands, and most development follows the Fathom Five shoreline along the tip of Bruce Peninsula from Cape Hurd to Dunks Point. Tobermory is a tourism-based economy with 99% of visitation occurring between May and October. The M.S. Chi-Cheemaun ferry operates seasonally. Marine heritage and water sports are central to the tourism base which offers boat tours, wreck diving, kayaking and fishing. The passion for marine heritage is evidenced by local leadership in the development of the maritime collection at the Visitor Centre and the very popular volunteer program at the Flowerpot Lightstation. During the summer months, the two harbours, known as Little Tub and Big Tub thrive with activity as visitors come to experience the peninsula environment.

LAKEWIDE CONTEXT

Monitoring and reporting could be a vessel for Parks Canada to engage with other agencies and interests on Lake Huron. Since the site comprises a relatively small area in a much larger multi-jurisdictional aquatic ecosystem, (e.g., 0.002 % area of Lake Huron), collaboration is seen as essential for efficiency, effectiveness, and relevance. With respect to “State of” reporting, two notable international initiatives exist, the biannual State of the Lake Ecosystem Conference (SOLEC, 2009) and the “State of Lake Huron” forum initiated by the Lake Huron Binational Partnership approximately every 5 years. Fathom Five and Parks Canada as a whole are



Little Tub Harbour in Tobermory Photo Credit: Willy Waterton

slowly building the relationship on which integration with these more substantial and comprehensive initiatives is possible. At this time, few results presented within this document are based on such collaborative efforts or data sharing.



4

State of the Park

Parks Canada is the federal agency that manages the representative system of national parks, marine conservation areas, and heritage sites in Canada. The Agency delivers its program through an integrated mandate that underscores a responsibility to “protect and present”. This is held as a public accountability and requires periodic “State of the Park” reporting.

This report provides a high level snapshot of the condition of natural and cultural resources and gives an indication of whether or not the condition is improving, stable or declining. The state of visitor experience and external relations is also outlined, however these aspects are new to ‘state of’ reporting and therefore little data is available. The synopsis on the following pages forms the foundation for identifying park management strategies that will achieve desired outcomes for heritage protection, public outreach education and visitor experience.

Specific to National Marine Conservation Areas the Act (Canada, 2002) states that:

Section 4(3)

“Marine conservation areas shall be managed and used in a sustainable manner that meets the needs of present and future generations without compromising the structure and function of the ecosystems, including the submerged lands and water column, with which they are associated.”

Section 9(3)

“In order to protect marine ecosystems and maintain marine biodiversity, the primary considerations in the development and modification of management plans and interim management plans shall be principles of ecosystem management and the precautionary principle.”

Although the Act (and policy) does not herald terms such as “ecological integrity” or “ecological health”, or explicitly define the management concepts of ecosystem management, precautionary principle or ecologically sustainable use, the priority for marine protected areas is to protect ecosystem structure, function and biodiversity and ensure that use is ecologically sustainable. As noted in the Act, meeting the needs of present and future generations is also a priority for the NMCA program. Table 2 provides some context on the two priorities and how they can guide indicators and measures.

TABLE 2

General Goals and Objectives to Assess Measures and Indicators

Maintain ecosystem structure and function	<ul style="list-style-type: none"> • Maintain viable populations of all native species, including genetic variants, in natural patterns of abundance and distribution. • Prevent non-native invasive species from becoming established. • Restore damaged or degraded ecosystems. • Maintain ecosystem functions within the range of natural variability, e.g., nutrient cycles, disturbance regimes, energy flow.
Enrich the human experience in a sustainable manner	<ul style="list-style-type: none"> • Demonstrate an ecosystem approach when planning for sustainable use and facilitation of visitor experience opportunities. • Create and support a vibrant set of traditional, ecological, and cultural activities including aesthetic, recreation, cultural, and ecological services, based on the needs and interests of visitors. • Foster appreciation and understanding of ecological knowledge, e.g., respect for local knowledge, public/staff scientific knowledge and understanding of sustainability. • Understand the visitor dynamics and demographics of Fathom Five through social science research.

TABLE 3

Thresholds used in Description of Rating Assessments for Ecological Sustainability Indicators

Indicator	Measure	Source/Rationale	Good 	Fair 	Poor 
↔ Coastal					
	Coastal Wetland Water Quality	Water Quality Index (WQI Chow-Fraser)	> 0	0 > (-1)	(-1) to (-3)
	Lake Levels	Range of variability approach using 1963-2003 daily averages as baseline	Majority lie inside 80% C.I.	Majority lie inside 95% C.I.	Majority lie outside 95% C.I.
	Coastal Fishes	Wetland Fish Index (WFI Chow-Fraser)	> 3.25	3.25 to 2.5	< 2.6
	Aquatic Plant Communities	Not Rated			
	Coastal Connectivity	Local experience	< 1 dock/ha	1 to 2 docks/ha	> 2 docks/ha
▼ Island					
	Habitat Amount and Connection	Ecologically Scaled Landscape Index (Great Lake coasts and islands)	> 66 th percentile	66 th to 33 rd percentile	< 33 rd percentile
	Alvar Quality	Alvar Quality Rank	> 10 ha	5 to 10 ha	< 5 ha
	Colonial waterbirds	Not rated			
▼ Offshore					
	Water Quality	Environment Canada	> 80	80 to 60	< 60
	Benthic Community	Not Rated			
▼ Lake Trout					
	Catch-per-unit effort	OMNR criteria	> 3	3 to 1	< 1
	Proportion of wild lake trout	OMNR criteria	> 20%	20% to 10%	< 10%
	Ice Coverage	Range of variability approach using 1978-96 as baseline	30% to 21%	33% to 30% or 21% to 19%	< 19% or > 33%
N/R Species at Risk (N/R)					

Indicator score determination

Indicator scores were determined based on their average measure score. Measures were assigned a numerical score based on their designated ecological thresholds. The values were: Good = 3.5; Fair = 2.5; Poor = 1.0

Measures scores were averaged for each indicator and the follow scale used to rank the indicator:

> 3.01 = Good; 1.76 - 3.00 = Fair; < 1.76 = Poor

4.1 RESOURCE CONSERVATION: ECOLOGICAL SUSTAINABILITY

Coastal Measures	State
Coastal Wetland Water Quality	↔
Lake Levels	↔
Aquatic Plant Communities	I/R
Coastal Fishes	●
Coastal Connectivity	●

Coastal Ecosystem Indicator

The coastline of Fathom Five is dominated by the effects of Lake Huron, including wave action, hydrology, and temperature. Coastal wetlands have established in a few protected bays. Given the biological significance and potential vulnerability to disturbance, the coastal indicator is focused on wetland measures. The current condition of the coastal indicator is assessed as good with a stable trend.

Coastal Wetland Water Quality - Water quality assessment is focused on turbidity, pH and conductivity, and has been completed annually at 8 sites in Fathom Five since 2005 using a Water Quality Index to assess the degree of human disturbance (Chow-Fraser, 2007). Although the island sites have slightly higher water quality than the mainland sites, the overall index values are consistently good, therefore the coastal wetlands of Fathom Five are considered to have good water quality with a stable trend.

Lake Levels - Lake level fluctuations are an important natural process in coastal ecosystems affecting the extent of aquatic plant habitat and consequently higher trophic levels including

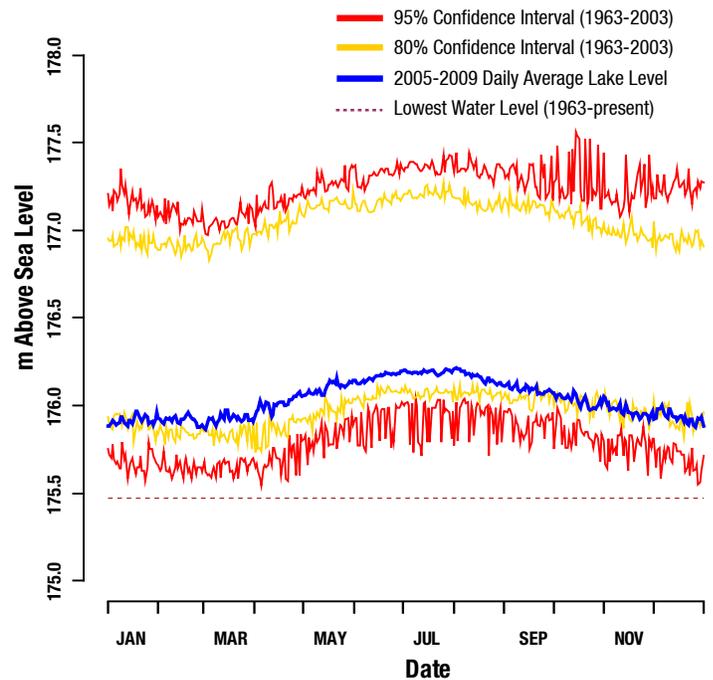


FIGURE 5
Average daily lake levels from 2005-2009 compared to historical (1963-2003) lake levels.

fish. This assessment is based on a range of variability approach, comparing the daily average lake level for the past 5 years (2005-2009) with the daily average lake levels from the previous 40 years (1963-2003), Figure 5. Although the lake levels were relatively low in 2005-2009, 84.1% of readings were within the expected range, therefore lake levels are considered to be good with a stable trend.

Aquatic Plant Community - Aquatic plants are responsible for essential functions in the wetlands such as fish and plankton habitat, nutrient retention, and oxygen production services. Three measures are currently being developed: % invasive species, aquatic plant cover (Trebitz and Taylor,



Coastal wetland monitoring Photo Credit: Robyn Korn



Smallmouth Bass Photo Credit: Parks Canada



FIGURE 6
In-shore development density in A) 1966 and B) 2006

2007), and an aquatic plant diversity index (Brazner and Beals, 1997). An invasive species, the common reed (*Phragmites australis*), has been detected in Hay Bay and Cove Island in 2008, and attempts to eradicate before it gets established are underway.

Coastal Fishes - Coastal wetlands of Fathom Five provide vital habitat for more than 40 species of fish. Coastal fish populations were assessed with the wetland fish index developed for the Great Lakes, and based on species abundance and species-specific tolerances to degradations (Seilheimer and Chow-Fraser, 2006). With the exception of Big Tub Harbour, the coastal wetlands of Fathom Five rank as good, but no trend has been assessed to date. Big Tub's decline may be related to the invasive round goby (*Neogobius melanostomus*).

Coastal Connectivity - Dock construction and other shoreline alterations occur on private lands adjacent to Fathom Five. Projects extending below the ordinary high water mark require an authorization from Parks Canada. Despite the mitigation of construction related concerns, the long-term cumulative impacts associated with in-shore development are uncertain. In 2006 there were 0.73 docks/ha along the mainland, up from 0.18 docks/ha in 1966 (Figure 6). The current status is still good, though it nears the threshold for fair (1 dock/ha). No trend has been determined.

Islands Ecosystem Indicator

Island Measures	State
Habitat Amount and Connection	▼
Alvar Quality	●
Colonial Waterbirds	N/R

The Fathom Five archipelago consists of fourteen islands and several islets, comprising a total area of 13.5 km² or 12% of the marine park. Only Flowerpot Island has public infrastructure and receives 40,000 visitors a year. The current condition of the island indicator is assessed as fair with no trend established to date.

Habitat Amount and Connection - This measure examines both the extent and connectivity of habitat available for amphibians and small mammals. The values for Fathom Five were compared with islands and shorelines throughout the Lower Great Lakes. The islands provide a fair amount of habitat for specific taxonomic groups, with good connectivity between patches.

Alvar Quality - Alvars or pavement barrens are open ecosystems lying on a limestone plain with very little or no soil, and which are internationally recognized for their rarity, and the habitat they provide for rare species. In Fathom Five, alvars are found on Bears Rump and Cove islands. Fathom

Five alvars were assessed as good based on information found in a report, but no trend has been assessed.

Colonial Waterbirds - Six colonial waterbird species nest on 4 shoals/islands of Fathom Five and the adjacent Snake Island: double-crested cormorant (*Phalacrocorax auritus*), herring gull (*Larus argentatus*), ring-billed gull (*Larus delawarensis*), common tern (*Sterna hirundo*), great blue heron (*Ardea herodias*), and black-crowned night heron (*Nycticorax nycticorax*). Although the largest nesting colonies are on Snake Island (just outside Fathom Five's boundaries) birds from those colonies frequently forage in the marine park. Fathom Five's colonial waterbird community has been relatively stable in the past four years, however, as thresholds and trends for this measure are still being developed, it remains not rated at this time.



Colonial Waterbird monitoring *Photo Credit: Parks Canada*

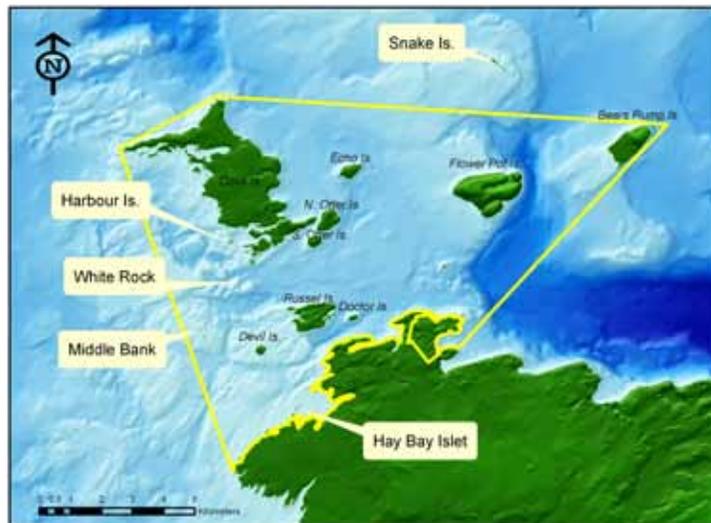


FIGURE 7
Location of the five colonial waterbird nesting sites in Fathom Five National Marine Park and the vicinity.

Benthic Invertebrate Community has experienced a dramatic change in the last 5-10 years. The invasion of quagga and zebra mussels (*Dreissena rostriformis* and *D. polymorpha*) is suspected in causing the crash in the native *Diporeia* sp. crustaceans; the invasive mussels are trapping nutrients and energy in the lakebed, and are thus affecting food web dynamics. In shallower waters, the invasive round goby is also affecting the native ecology. Benthic monitoring within Fathom Five was initiated in 2009.



Benthic Invertebrate Diporeia *Photo Credit: Ethan Meleg*

Offshore Ecosystem Indicator

Offshore Measures	State
Benthic Community	N/R
Water Quality	↓
Lake Trout	▼
Ice Coverage	↔

The offshore ecosystem of Fathom Five is low productivity, with generally deep (> 30 m), cold (average <10°C) waters, which are low in productivity and high in oxygen concentration (> 95%). The ecosystem has undergone a dramatic change in the past century from such impacts as over-fishing and invasive species. The current condition of the offshore indicator is fair and no trend has been determined to date.

Water Quality - Offshore water quality is based on data from 8 sites within the greater park ecosystem. The waters have low concentrations of nutrients, especially poor in phosphorus with a total threshold of 5 microgram per litre. Recent years (2000-2007) showed a decreasing trend in the phosphorus concentration, probably due to sequestering by quagga and zebra mussels (Figure 8). Average total nitrogen conditions remained similar between 1984-1994 and



Lake Trout Photo Credit: Parks Canada



Islands of Fathom Five Photo Credit: Parks Canada

1994-2007 (0.45-0.46 microgram/litre). Overall water quality remains good, but decline in phosphorus signals a declining trend.

Lake Trout - Historically, the lake trout (*Salvelinus namaycush*) was the dominant predator in Fathom Five, but then declined dramatically following the invasion of the non-native sea lamprey, *Petromyzon marinus*, and over-fishing. Through stocking and invasive species removal this species is beginning to show signs of recovery in some areas of Lake Huron. In 2009 16.7% of the lake trout examined in Fathom Five were wild (i.e., not stocked fish). Currently, lake trout are assessed as fair. No trend has been established to date.

Ice Coverage - The effects of climate change will be most noticeable through warmer surface waters and decreased ice coverage, which in turn influence primary productivity and food webs. Ice deflects winter storm effects by protecting shores and important fish habitats, and limiting lake effect snow. Though the ice cover is declining, the last ten years showed no significant trend. However, three of the last five years have fallen below the lower threshold score of 19% indicating that this measure is in poor condition but relatively stable.

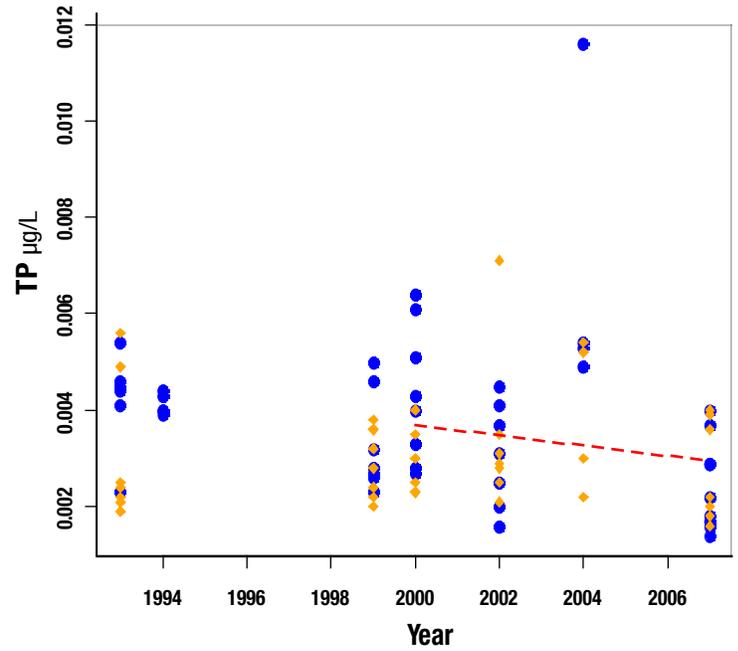


FIGURE 8

Total phosphorus concentrations in the Greater Park Ecosystem.

Values represented by ● are from Lake Huron and values represented by ◆ are from Georgian Bay. The linear regression model (- -) shows a significant decreasing trend between 2000-2007.

Species at Risk Indicator

Fathom Five National Marine Park provides seasonal and year round habitat for nine species listed on Schedule 1 of the federal Species at Risk Act (SARA) (Table 4). However, it should be noted that the only portions of the park where SARA applies are on the islands (14 km²), while the remainder of Fathom Five (112 km²) remains provincial jurisdiction. Therefore, species designations under the Ontario Endangered Species Act, 2007 (ESA, 2007) are relevant to the management of species at risk in Fathom Five. Three species that occur in Fathom Five are listed on the ESA,



Eastern Massasauga rattlesnake Photo Credit: Parks Canada

TABLE 4
SARA Schedule 1 Species in Fathom Five National Marine Park

Common Name	SARA designation	MA Rank*	Trend	Comments
Shortnose Cisco	Endangered	MAU	N/A	Maybe extirpated from Huron
Shortjaw Cisco	Threatened	MA1	N/A	Rediscovered in FFNMP in 2006
Deepwater Sculpin	Special Concern	MAU	N/A	Known to occur in FFNMP but no inventories have been done.
Upper Great Lakes Kiyi	Special Concern	MAU	N/A	Considered extirpated from Lake Huron.
Blackfin Cisco	Threatened	MAX	N/A	Considered extirpated from the Great Lakes and may be extinct.
Monarch	Special Concern	MAU	N/A	This migrant butterfly is known to occur regularly but systematic surveys have not been conducted to date
Massasauga Rattlesnake	Threatened	MA2	N/A	Regular monitoring of a known gestation site and many incidental observations suggest a small but stable population is present on Cove Island.
Eastern Ribbon Snake	Special Concern	MAH	N/A	There are historical records of this species but it has not been recorded in recent times.
Milksnake	Special Concern	MAU	N/A	Known to occur in FFNMP but no inventories have been done.

*MA1 – critically imperilled; MA2 – imperilled; MA3 – vulnerable; MA4 – apparently secure; MA5 – secure; MAH – historical; MAU – known to occur but of unknown status; MAX - extirpated

2007 but not on the SARA. These are: Lake Sturgeon (Threatened), Whip-poor-will (Threatened), and Bald Eagle (Special Concern).

Some of the most noteworthy at-risk fauna in Fathom Five are the cisco. The six herring-like cisco species which historically occupied the deepwaters of Fathom Five evolved from an ancestor which colonized the early Great Lakes. The most notable difference between the ciscoes is the size and shape of their head features, reflecting an adaptation to different food sources. Unfortunately, over-fishing and invasive species, have caused the extinction of one, while four other species may be extirpated or threatened. Freshwater species are the most globally imperilled, and this conservation imperative is no more significant or tragic as it is within a protected area.

4.2 RESOURCE CONSERVATION: CULTURAL RESOURCES

Submerged Cultural Resource Condition Indicator

Cultural Resource Measures	State
Archaeological Sites	▼
Objects	▼

Fathom Five has both submerged and terrestrial components. Submerged cultural resources consist of a total of 29 underwater sites, the remains of 27 vessels and 2 sites comprised of shipwreck related materials. The overall condition for this indicator is fair and no trend is available.

Archaeological Sites - All of the above underwater sites lie within the boundaries of Fathom Five and have been examined by Parks Canada's Underwater Archaeology Service (UAS). Not all of the shipwrecks have been identified. A few

other sites were examined in a limited fashion. In addition to the archaeological investigation, 13 of these wrecks have undergone a conservation assessment. The archaeological site condition is rated as fair and no trend is available.

Objects - Over the years objects from several shipwrecks were collected by Fathom Five personnel and associated divers. Many of these artefacts are on display in the Visitors Centre, and others were placed in storage. Artefacts gathered from the shipwrecks have not been assessed recently. The object condition is rated as fair and no trend is available.

Terrestrial Cultural Resource Condition Indicator

Cultural Resource Measures	State
Archaeological Sites	
Buildings and Structures	
Landscapes and Landscape Features	
Objects	

The most extensive investigations in Fathom Five have involved simple surveys of coastal areas exhibiting good site potential (such as Glen Site in Flowerpot Island, Dunks Bay, Griffon Cove, etc.). The most recent archaeological investigation was done in 2009, to mitigate the clean up of the Lighthouse property on Flowerpot Island. The overall resource condition is rated as fair and no trend is available.

Archaeological Sites – The archaeological surveys in 1988 and 1991 focused primarily on island shores and the coast of the mainland property. The objectives of these investigations were to provide the park with an up-dated inventory of cultural resources, evaluate the archaeological importance of the resources, assess the current condition and level of threat to each resource, and recommend strategies for maintenance and protection. A total of 35 sites were located and documented, of which 29 are Aboriginal. The Aboriginal sites include campsites, rock structures, lithic tool workshops, portage sites, burials, and ceremonial sites. The remaining six sites are historic sites, mainly logging camps. Twenty-four (24) sites are considered to be of high significance, two of medium significance, and nine low. Just over one-third of the known archaeological sites in the park have either been damaged or are at risk of being damaged. The archaeological site condition is rated as fair and no trend is available.

Buildings and Structures – There are a very few historic buildings in the park, and most of these are associated with light keeping. The Flowerpot light station has just recently been included in the national marine park. Although the lighthouse itself is no longer operational, five buildings associated with the station remain. There is also a log building in Dunk's Bay, on the park's mainland property. That cabin and Flowerpot Lightkeeper's House have been assessed by Federal Heritage Buildings Review Office, but were deemed not to be heritage buildings. The condition and trend for this measure was not rated.

Landscapes and Landscape Features – There has been no assessment of the park's landscapes in terms of cultural values. The condition and trend for this measure was not rated.

Objects – The Fathom Five marine archaeological cultural artefacts are stored and presented in the Parks Canada Visitor Centre in Tobermory, Ontario. The artefacts were assessed in 1997, and conservation measures were outlined. An additional ~25,000 archaeological artefacts from Fathom Five are housed at the Ontario Service Centre in Cornwall, Ontario. The archaeological object collection is rated in good condition and no trend is available.



Artefact Collection at Visitor Centre Photo Credit: Parks Canada



Flowerpot Island Lightkeepers residence *Photo Credit: Ethan Meleg*

Cultural Resource Management Practice: Submerged Cultural Resources Indicator

Selected Management Practices Measures	State
Inventory	▼
Evaluation	▼
Cultural Resource Management Strategy	■
Monitoring	▼

Although the 1998 park management plan identifies several cultural resource management priorities, including the development of a comprehensive cultural resource management strategy, most have not been implemented. Currently, there is no coherent management strategy or a cultural resource values statement. The overall rating for submerged resources is fair.

Inventory - Between 1988 and 1994, and later in 2007, 29 underwater sites were inventoried. There are additional sites, that have yet to be inventoried (e.g. the ore dump site, dock sites, anchor sites, and the “Griffon” site on Russel Island etc). Precontact sites were not the focus of the UAS surveys. The underwater archaeological investigations included a

side-scan sonar survey, and documentation of the wreck sites. Several records/reports from the early survey years have to be finalized, and the 2007 report is in progress. Conservation assessments were conducted on a few shallow water sites. The condition of this measure is rated as fair and no trend is available.

Evaluation – In the Ringer & Folkes (1991) marine archaeological report, the Fathom Five wrecks were listed as having local, regional, or national significance. The shipwrecks were well documented at the time, but were not evaluated in a manner consistent with the present Cultural Resource Management Policy. The condition of this measure is rated as fair and no trend is available.



Wrecks at Big Tub Harbour *Photo Credit: Parks Canada*

Cultural Resource Management Strategy - The current Fathom Five National Marine Park Management Plan and the Cultural Resource Management Plan are out of date, and the status of the Parks Collections Management Plan is unknown. The condition of this measure is rated as poor and no trend is available.

Monitoring - A shipwreck monitoring program was put in place in 1992. The program is based on the detailed study of six wrecks representative of the different ship types. The aim of the program is to record and evaluate the primary causes and the rates of deterioration of the shipwrecks, including integrity of the remains and the deterioration of the materials. In addition, the Canadian Conservation Institute has undertaken monitoring projects, including a Corrosion Rate Study and a Zebra and Quagga Mussel Study. Between 1992 and 2007, scientists from the Ontario Service Centre visited Fathom Five wrecks nine times, taking measurements, samples, photographs, and video. The most recent report analyzing the data gathered during the 2007 visit is in progress, and Conservation Services will provide recommendations on restructuring the monitoring program to suit the present situation. According to the data retrieved to this date, the materials composing the wrecks (metal and wood) are mainly in fair condition and are deteriorating at a natural expected rate. Most hulls have a reasonable level of stability but one, the Arabia, raises some concerns. The condition of this measure is rated as fair and no trend is available.



Diver on Alice G Photo Credit: Parks Canada



Shipwreck monitoring Photo Credit: Parks Canada

Cultural Resource Management Practice: Terrestrial Cultural Resources Indicator

Although the 1998 park management plan identifies several cultural resource management priorities, including the development of a comprehensive cultural resource management strategy, most have not been implemented. Currently, there is no management strategy or cultural resource values statement. As a result, the overall state is not rated.

Selected Management Practices Measures	State
Inventory	
Evaluation	
Cultural Resource Management Strategy	
Monitoring	

Inventory – The archaeological inventory completed in 1991 was limited in scope. The survey, focused exclusively along the park’s shorelines, was only a cursory examination of areas with good site potential, relying on surface examination and limited shovel testing. The survey proposed that future investigations be undertaken in the interior of the islands and the mainland property. Furthermore, the survey highlighted those cultural resources under threat and in need of regular monitoring and possible mitigation. To date, no action or further research has been undertaken. The condition of this measure is rated as poor and no trend is available.

Evaluation – A cultural resource values statement is the main instrument used to evaluate cultural resource management levels and the nature of a resource’s historic value (physical values and human themes). The national marine area has not undertaken this exercise yet. A joint terrestrial and marine archaeological resource management plan was developed in 1995. In this plan, the various known archaeological sites within the park were evaluated in terms of their interpretive potential and their level of importance. The condition of this measure is not rated and no trend is available

Cultural Resource Management Strategy – The need for a cultural resource management strategy is identified in the 1998 management plan. Currently, there is no comprehensive strategy. The condition of this measure is not rated and no trend is available

Monitoring – No formal cultural resource monitoring program exists. When specific projects that require grounds disturbance are undertaken, archaeological research and mitigation and/or protection measures are developed. The condition of this measure is not rated and no trend is available.

4.3 VISITOR EXPERIENCE

Visitor experience is defined as the sum total of a visitor's personal interaction with the park; an interaction that awakens the senses, affects the emotions, stimulates the mind, and helps the visitor to create a sense of connection to these places.

There are no Agency wide criteria/thresholds currently in place to be able to assess condition (good, fair, poor) for the visitor experience indicators (Visits, Learning, Enjoyment, Satisfaction, Meaning). A Visitor Information Program (VIP) was completed for Bruce Peninsula National Park in 2007. Since the Visitor Centre services both the National Park and National Marine Park, some of the data in the VIP helps explain the state of visitor experience in Fathom Five. However, in most instances it is not possible to rate the measures until a VIP is conducted specifically for Fathom Five.

Visits Indicator

Measures	Trend
Attendance	↑
Satisfaction with Information	N/R
Marketing Efforts	N/R

Renowned as the Dive Capital of Canada, Fathom Five entices visitors with its crystal clear waters, historic wrecks, and opportunities for water based sports. The 2007 Patterns of Visitor Use suggested that at least 22.4% of visitors to Bruce Peninsula National Park also visited Fathom Five. The majority of visitors come from Southwestern and Central Ontario which includes Toronto (43% and 38% respectively). The majority of visitors (52%) are between the ages of 35 and 54 (Parks Canada 2007). This indicator is not rated and no trend is available.

Attendance - Fathom Five operated an information centre in Tobermory from 1988 until the opening of the new Visitor Centre. The Visitor Centre provides visitors with a sense of arrival, information about the key features and hazards, and a world-class experience. From 1996 to 2009 the average length of stay at the Visitor Centre rose from approximately 10 min to 1 hour and 30 min. Gathering statistical data for Fathom Five remains a challenge because many visitors experience the marine park with private boats and others do not register. Figure 9 provides an estimate of the visitation of the four main activities in Fathom Five. There was a change in methodology for estimating visitation at the Visitor Centre, however, there is a 10.7% rise in person-visit-days at the Visitor Centre between 2008 and 2009. Scuba diving registrations are down by approximately 600 divers since 2005.

Satisfaction with Information

The 2009 Visitor Experience Assessment identified Parks Canada's website as a weakness for trip planning, and steps



Lake Huron shoreline Photo Credit: Scott Currie

Fathom Five # of Visitors By Activity and Site

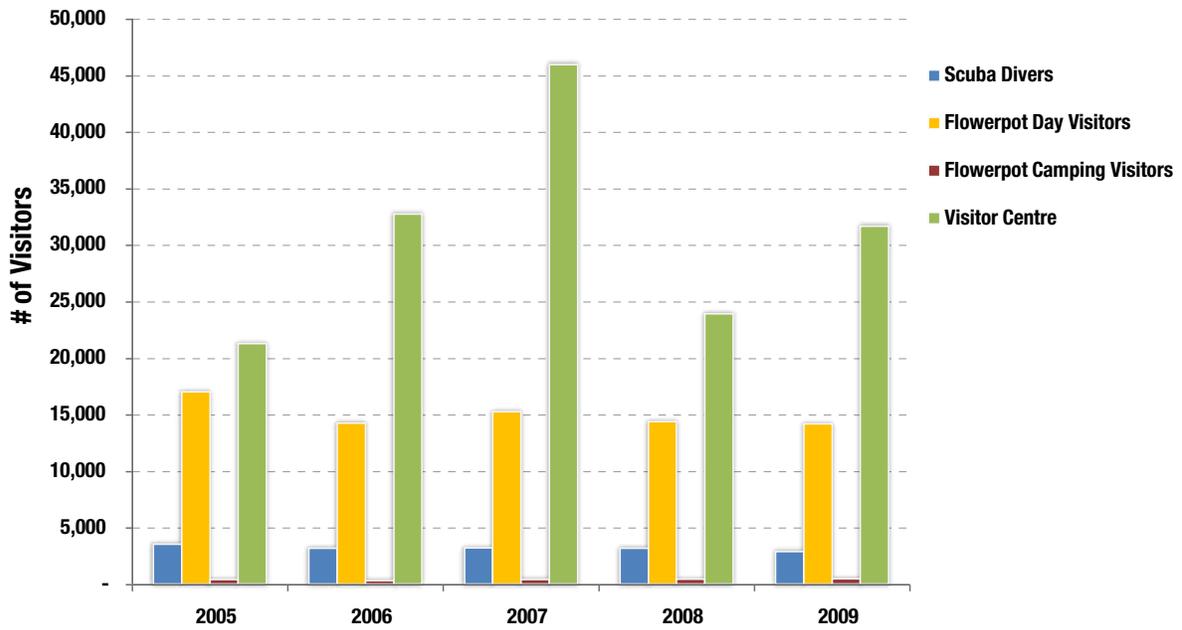


FIGURE 9
Fathom Five Visitation by Activity



Kayaking on Lake Huron *Photo Credit: Parks Canada*



Family Preparing to Dive at Big Tub Lighthouse
Photo Credit: Ethan Meleg

are being taken to improve the quality of information; in the future the website will provide site-specific details for planning purposes.

Marketing Efforts - In the past two years, a significant amount of marketing has occurred, driven by Parks Canada and partner groups. Parks Canada is capitalising on important marketing opportunities, with partners including Bruce County Tourism.

A significant number of media tours have occurred, and the marine park has received a large amount of editorial content in regional tourism publications.

The Locals Know campaign by the Canadian Tourism Commission resulted in increased awareness of the Fathom Five. The Georgian Bay Destination Marketing Partnership has focused on making all of Georgian Bay a tourism destination, and promotes the marine park along with other tourism attractions within the region. The Ontario Tourism Marketing Partnership - Outdoor Product Committee is working on research-driven tourism products and is assisting Parks Canada staff in developing marketing techniques. The 2010 Great Ontario Outdoor Adventure campaign's highlight of Fathom Five is a result of a marketing partnership between Parks Canada, Ontario Parks, Conservation Ontario and Ontario Tourism. Several photos of Fathom Five are showcased in the 2010 Great Ontario Outdoor Adventure calendar including the iconic flowerpots on the cover page. These calendars are being widely distributed to subscribers of Canadian Geographic Travel.

Learning Indicator

Measures	Trend
Attendance	↑
Learning Opportunities	N/R
Satisfaction: Learning	N/R

Fathom Five offers various learning activities through weekly summer programming and special events, including guided hikes, guest presentations, interpretive stations, workshops, demonstrations, and brochures/literature. This indicator is not rated and no trend is available.

Attendance - Although no specific attendance surveys for Fathom Five have been completed, since 2006 the overall participation in interpretive activities has increased due to the new Visitor Centre. Visitors now tour through the galleries and have the opportunity to learn, enjoy and connect with both natural and cultural history displays. There have been shifts in visitation within the guided interpretive programs and while the number of program staff has been reduced, they remain integral to the quality and dynamic Visitor Centre programming. The Visitor Centre provides an important information centre for new and returning visitors, for the diver registration, and as a venue to host guest speakers and special events.



Interpretive sign at Flowerpot Island
Photo Credit: Parks Canada



Visitor Centre Photo Credit: Ethan Meleg

TABLE 5

Attendance Data for Fathom Five National Marine Park Interpretive Activities

Fiscal Year	2005	2006	2007	2008	2009	Change from previous year
Guided Interpretive Program Attendance	8850	4248	15540	16360	7155	-56%
Visitor Centre Attendance	not open	30511	56844	59878	66359	+10%
Total	8850	34759	72384	76238	73514	-4%

TABLE 6

Participation in On-site Learning Activities

Learning Activity	# Participants/Contacts				Change from previous year
	2006	2007	2008	2009	
Formal Education On-site	545	662	1146	801	-30%
Special Events On-site	~230	~240	~350	~480	+37%

TABLE 7

Fathom Five - Facility Ratings at Visitor Centre

FACILITIES	Very Satisfied (target 50%)	Satisfied	Total (target 85%)
Condition of Visitor Centre	77	17	94
Quality of Visitor Centre	71	20	91
OVERALL	63	5	94

Learning Opportunities - The Visitor Centre has fulfilled its role of becoming a key venue for visitor learning activities, for hosting seasonal special events, providing an orientation to visitors, and a gallery focused on key themes for Fathom Five and Bruce Peninsula. The orientation film presents a year round opportunity to experience the above-the water and underwater features of the Fathom Five. The second annual Knowledge Forum was recently held at the Visitor Centre. Over 90 people attended the event to gather and share scientific and traditional knowledge.

Visitors taking the tour to Flowerpot Island, on third party boats, are given information about the shipwrecks. Parks Canada staff based on the Flowerpot Island provides information as requested.

Satisfaction: Learning - The completion of the Visitor Centre in 2006 facilitated transfer of knowledge about ecological features and key issues affecting Fathom Five on a year round basis. The information is presented on multiple levels of complexity to appeal to a wide range of visitors. The gallery highlights the marine heritage and Aboriginal content; fundamental in telling the human story of Fathom Five and the surrounding communities. Individualized on-site education programs are based on special requests by schools and universities.

Enjoyment Indicator

Measures	Trend
Extent of Enjoyment	N/R
Facilities	
Services	N/R
Activities	N/R
Staff	N/R

Enjoyment is measured through two types of questions: those related to enjoyment factors, and those addressing visitor services. This indicator is not rated and no trend is available.

Extent of Enjoyment: A Fathom Five-specific survey has not been conducted.

Facilities: The 2007 visitor survey found that 77% of visitors thought of the condition of the Visitor Centre as very satisfying, and 71% considered the quality as very satisfying.

Services: While many of the services from staff are available to both the National Park and National Marine Park, there has been no specific evaluation of services related to Fathom Five.

Activities: The Diver Registration Program of Fathom Five was designed to provide administration, visitor safety, monitoring, and mooring services; however, this program currently faces certain challenges to effectively provide valuable services to visitors. Formerly, divers registered at the Little Tub Harbour, from where most diving boats depart, but since 2007 registration was moved to the Visitor Centre. Other programs are under development, including a safety program for paddlers. The Patterns of Visitor Use study (2007) identified that more than 50% of the day use visitors at the Visitor Centre climbed the tower, visited the gift shop and watched the film in the theatre. The trails on the Fathom Five landbase were used by 10% of day use visitors.

Staff - Overall satisfaction with staff, based on the 2007 VIP at Bruce Peninsula National Park and the Visitor Centre, exceeds Parks Canada targets. Provision of consistent information to visitors regarding activities, fees and site characteristics is an area that can be improved.

Satisfaction Indicator

This indicator is not rated and no trend is available.

Draft Measures	Trend
Overall	N/R
Fees	N/R

Overall: Fathom Five National Marine Park and Bruce Peninsula National Park are interconnected, from a visitor perspective, due to their proximity, and the content at the Visitor Centre gallery. Visitor satisfaction specific to Fathom Five can not be measured at this time.

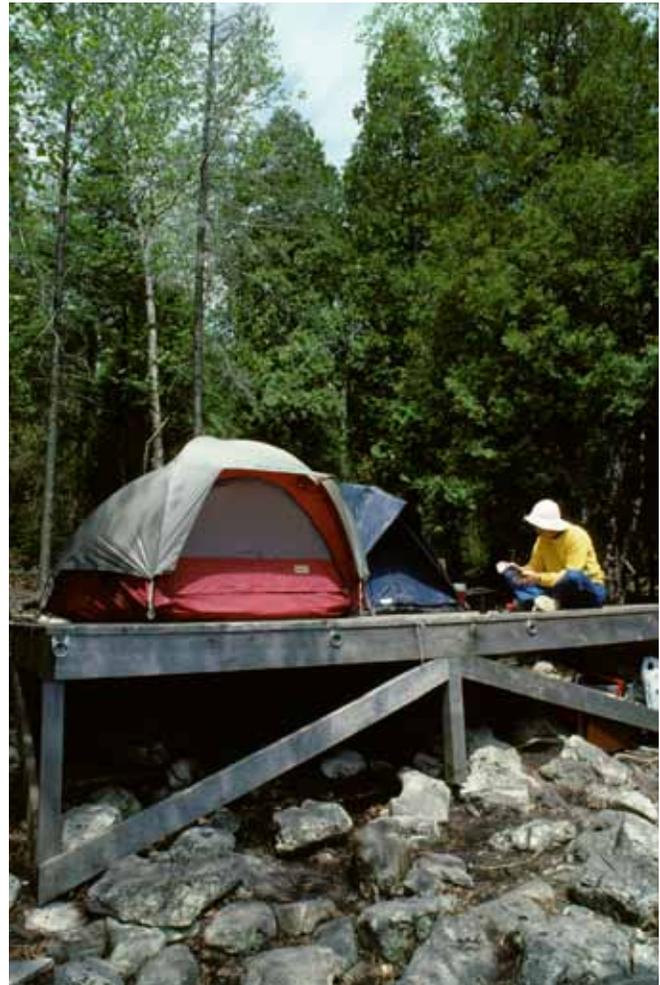
Fees: Dissatisfaction with fees were clearly expressed in the 2007 visitor survey, particularly by visitors who wanted to experience both the national park and the national marine park, or those who camped in Cyprus Lake and wanted to explore other park venues. Bruce Peninsula National Park is the only national park that issues 12 hour parking permits, whereas Fathom Five has a per person fee valid for 24 hours. Many visitors, who have already paid for camping or parking



Burnt Point Lookout *Photo Credit: Scott Currie*



Snorkeling with Crayfish *Photo Credit: Parks Canada*



Campsites on Flowerpot Island *Photo Credit: Parks Canada*

in Bruce Peninsula, get frustrated by having to pay a separate fee to tour the Visitor Centre or the observation tower. Recent promotions, such as early bird sales of annual passes, have slightly increased pass sales but still require the purchase of two separate passes leading to frustration and confusion for both visitors and staff. Simplifying the fee system is necessary to improve visitor experience and create a better value-added perception of fees in these two national parks.

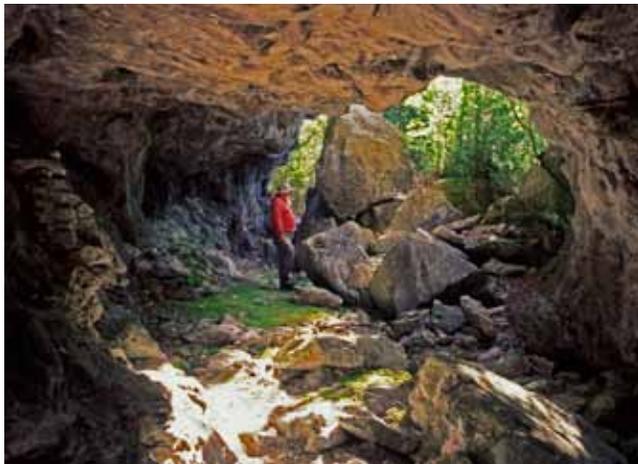
Meaning Indicator

Measures	Trend
Overall	N/R

Many Canadians have a strong sense of connection to their heritage places, and Fathom Five is no exception. Approximately a half million residents from south-western Ontario claimed that visiting a natural park or a national marine area was one of the main reasons for taking trips. The proximity of Fathom Five to a growing market creates many opportunities for making meaningful connections with people.

Currently research is lacking on: 1) the proportion of visitors who consider Fathom Five a special place, and/or a part of their identity; 2) the proportion of visitors who believe that they can enjoy certain activities only in the national marine park; and 3) the relationship between products and services, and visitor expectations and preferences. Meaningful measurement tools to better understand needs of visitors and identify future trends are required.

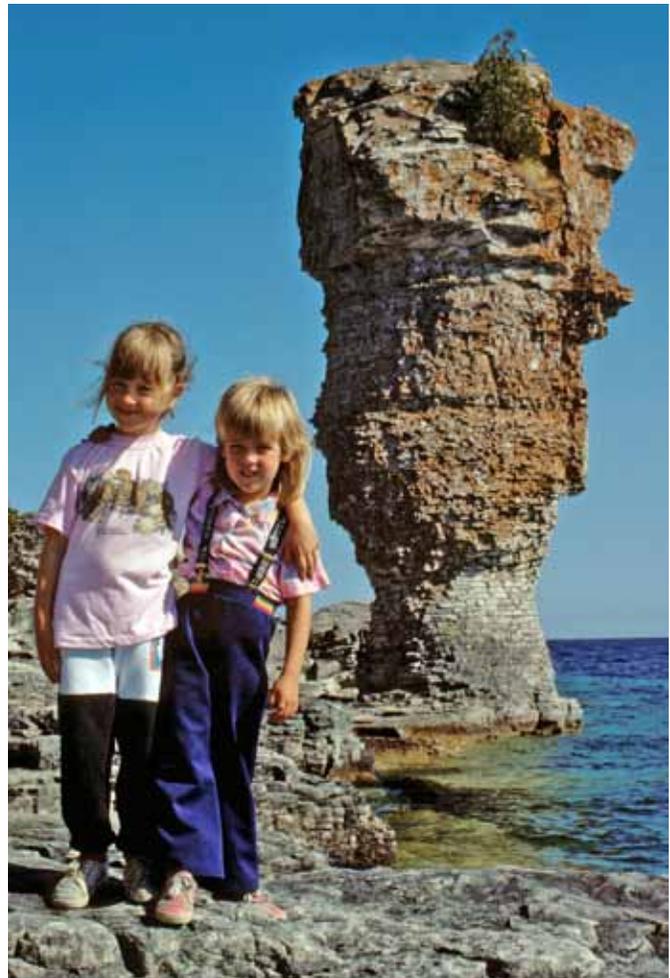
This indicator is not rated and no trend is available.



Hiker at Cave 3 on Flowerpot Island *Photo Credit: Parks Canada*



Hiking the Mountain Trail on Flowerpot Island *Photo Credit: Parks Canada*



Kids at Flowerpot *Photo Credit: Parks Canada*

4.4 EXTERNAL RELATIONS

Public outreach education includes a wide range of activities that contribute to fostering awareness and a sense of connection to Fathom Five National Marine Park. Stakeholder and partner engagement activities also aim to promote a common understanding and appreciation of the natural and cultural heritage values of the park so that people have an opportunity to influence and contribute to Parks Canada activities.

There are currently no Agency wide criteria/thresholds in place to be able to guide the assessment of condition (good, fair, poor) for the external relation indicators (Appreciation and Understanding, Support). No ratings or trends have been assigned.

Appreciation and Understanding Indicator

Measures	Trend
Overall	N/R

This is a new indicator and appropriate measures are currently in development; the following provides a brief narrative of public outreach education and external communications activities.

National Level - Parks Canada makes every effort to educate Canadians about their national parks, national marine areas, and national historic sites. Public outreach education and external communications allow the agency to cultivate appreciation and understanding by providing effective and relevant learning opportunities to reach Canadians at home, at leisure, at school, and in their communities.

Park Level - Public outreach education at Fathom Five focuses on formal and informal learning to engage local and regional audiences in conservation and learning activities. Special events and external communications reach those further afield. Since 2006 there has been an overall increase in the number and quality of opportunities to foster appreciation and understanding among a wider range of audiences, and between 2 000 and 20 000 people have been reached annually. Programs included species-at-risk, aquatic ecology, outdoor safety, sustainable living, and Aboriginal studies.

Formal Education is linked to schools, colleges and universities, and associated with official curricula. Parks Canada offers programs for elementary and secondary students of all grade levels, and college and university undergraduate students. The programs primarily target schools in the Bluewater and Bruce-Grey Catholic district school boards, with a greater emphasis on three local schools. Special programs have been developed according to the needs of specific audiences. Parks Canada also played a significant



Young Diver in Hard Hat at Scuba World Trade Show
Photo Credit: Parks Canada



Bruce County Tourism Promoting Fathom Five at Trade Show
Photo Credit: Parks Canada

TABLE 8
Number of Participants/Contacts in Public Outreach Education

Outreach Activity	# Participants/Contacts				Change from previous year
	2006	2007	2008	2009	
Formal Education					
In-school	51	73	310	373	+20%
Special Initiatives	~340	~340	~420	~450	+7%
Group Presentations	~800	~800	~800	~800	0%
Off-site Special Events	~400	~400	~16500	~8500	-51%
Landowner Stewardship	~32	~38	~52	~64	+23%
Total	~2398	~2553	~19578	~11468	-41%

role in planning and hosting the annual environmental youth conferences and workshops.

Organized Group Presentations – Parks Canada delivers presentations among a broad range of audiences, including partner organisations. Presentation themes often reflect interests of a particular group.

Landowner Stewardship Programs – Most stewardship-related communications took place in the Hay Bay area, in response to landowner concerns or questions related to Parks Canada activities in the area. Fathom Five also communicates with landowners through the shoreline alteration permitting process. Parks Canada has assisted with the development of a high school curriculum-based

course - Environmental Resource Management, and facilitated the Ecology Study Group that allows keen high school students to spend one day a month at the park with ecologists learning about aquatic ecology and monitoring.

Special Initiatives: Citizen Science Programs provide an opportunity to engage Canadians in experiential learning while contributing to knowledge of natural history, such as participation in the Butterfly Count on the islands of Fathom Five.

Informal Education occurs through social interactions (in-person or virtual), reading, and events whose primary purpose is not educational.



Park Display at International Ploughing Match Photo Credit: Parks Canada

Off-Site Special Events - Parks Canada participates in local, regional, and provincial events to promote appreciation and understanding of Fathom Five's importance in marine conservation. These special events focus on environmental, cultural, or tourism themes, and provide interpretive and visitor experience information.

External Communications Products - Periodic articles in the local newspaper have profiled Parks projects and events to the surrounding community. The site contributed to several television documentaries, reaching out to broader audiences, including A Park for All Seasons filmed in the summer of 2009. An episode of Geologic Journey featured a significant portion on the Fathom Five's geology, and Water Life profiled coastal wetlands, and raised awareness of the impacts of global warming and changing lake levels.

Support Indicator

Measures	Trend
Overall	N/R

National Level – It is expected that by March 2014 the “percentage of stakeholders and partners that support the protection and presentation of Parks Canada’s administered places” will increase and that these stakeholders and partners will “feel that they have opportunities to influence and contribute to Parks Canada’s activities”.

Park Level – Parks Canada identified 139 stakeholders and partners engaged in strategic partnering at Bruce Peninsula/ Fathom Five (Figure 14). Overall there has been an increase in support for Fathom Five over the last five years.

Stakeholder Involvement - Parks Canada seeks to broaden stakeholder involvement in decision-making. Fathom Five has provided some new opportunities for stakeholder input in park planning, management, and operations.

Park Advisory Committee (PAC) consists of representatives from 19 organizations with local, regional, provincial and national interests in the national marine park. PAC was created in 1987 to advise Parks Canada on protected areas management, communicate information with member organizations, and undertake initiatives that benefit both the protected area and the people. This group is essential for consulting the local community and seeking inputs in park management planning.

Municipality of North Bruce Peninsula Community

Committee - The park participates in a community-based committee established in 2009, and shares information, and

advises on matters pertaining to Parks Canada policies and management, particularly on local hiring. This committee provides an opportunity to strengthen relationships between Parks Canada and the local municipality.

Strategic Partnering - Parks Canada participates in several multidisciplinary committees and working groups that provide mutually beneficial resources, including the Lake Huron Bi-national Partnership. Other multi-disciplinary committees and working groups with whom Parks Canada collaborates include the Niagara Escarpment Biosphere Reserve, and Niagara Parks and Open Spaces System Council, which focus on Fathom Five’s connection to the Niagara Escarpment.

Relevance as a Source of Knowledge - Parks Canada recently partnered with the Park Advisory Committee to coordinate the annual Sources of Knowledge Forum, intended as a platform for sharing local ecological and social research, and to celebrate local action. In 2009 the Forum brought together 130 individuals from 70 organizations, profiling Parks Canada’s relevance as a source of knowledge for Canadians.

Providing High Quality Education - In 2008, Parks Canada was invited to an advisory committee for a pilot project of the Ministry of Education. Two local secondary schools were selected for a program specializing in the environmental sector. In 2009, the parks developed an agreement with Earthbound Greenhouses to deliver an annual workshop on native landscaping, and a section of disturbed land around the Visitor Centre was transformed into a demonstration garden for native landscaping.

Enhancing Regional Tourism – Parks Canada has been actively involved with two regional committees to promote both Fathom Five and Bruce Peninsula as key regional destinations. A new arrangement has been established with a

Partners & Stakeholders		
Partner Type	#	%
Environmental Management	58	42
Academic	20	14
Travel/Tourism	16	11
Community Groups	12	9
Outreach	11	8
Recreation	10	7
Safety	4	3
Other Parks/Sites	4	3
Culture	3	2
Cooperating Association	1	1
Total	139	100

FIGURE 10
Partner Profile



Canadian Coast Guard Vessel Patrolling Georgian Bay Waters Photo Credit: Parks Canada

local tour boat company that offers tours within Fathom Five, and transports visitors to Flowerpot Island. The company will further cooperate with Parks Canada by collecting user fees and providing visitor information to its passengers.

Ensuring Safe Experiences – Parks Canada has maintained a strong relationship with local emergency response agencies and has collaboratively addressed many public safety incidents, including search and rescue, fire, and dive related emergencies, among others. This network includes the local volunteer fire team, emergency medical service, Ontario Provincial Police, Canada Coast Guard, and the decompression chamber at the local medical facility.

Cooperating Association - The Friends of Bruce District Parks are a small, but effective group supporting park operations and

promoting awareness of the natural and cultural resources. The group runs a gift shop at the Visitor Centre, and the revenue funds children’s programming throughout the year. Other Friends activities are centred on the Orchid Festival, and presenting documentaries that align with Parks Canada goals.

This indicator is not rated and no trend is available.

5

Performance Rating



In order to achieve its strategic outcome, Parks Canada identifies Agency-wide expected results and performance expectations, for each program, that are outlined in the Parks Canada Corporate Plan. This chapter reports the extent to which Fathom Five has achieved its park-level performance

expectations, which contribute to the Agency's strategic outcome. These results will help improve or maintain the state of the marine park in areas that the Agency has the ability to influence. Below are the specific performance targets that were set in the 2005 Corporate Plan.

Performance Rating

TABLE 9A
Heritage Resource Conservation

Performance Expectation	Rating	Results/ Rationale
Approved monitoring guidelines and indicators to measure the state of ecologically sustainable use, ecosystem function and structure by March 2013.	Not Met	Program is in development. Established ecological indicators with limited suite of measures and approximately 5 years data include colonial waterbirds, coastal wetland, and water quality. Social indicators are in concept stage.
Maintain the condition of cultural resources.	Mostly Met	Conservation efforts focused on shipwrecks. Limited effort on terrestrial cultural sites and damage observed.
100 % of species at risk found in the NMCA that Parks Canada has the lead responsibility for, have a recovery strategy in accordance with the legislated timelines.	Not Met	Eastern massasauga rattlesnake is the only species in Fathom Five with Parks Canada lead responsibility. Recovery strategy is facing delay. Fathom Five is not participating in the recovery planning of any the other species at risk found within the park because they are a provincial responsibility.

TABLE 9B

Public Appreciation and Understanding

Performance Expectation	Rating	Results/ Rationale
50% of national park visitors participate in a learning experience related to natural and/ or cultural heritage.	No data available for Fathom Five.	
85% of visitors are satisfied, 50% are very satisfied with on-site heritage presentation programming.	Mostly Met	Although there is no specific Fathom Five survey, the 2007 Visitor Survey for Bruce Peninsula National Park identified that 83% of visitors were satisfied, and 53% were very satisfied with their overall experience with heritage presentation programming (including Visitor Centre exhibits and programs). All indicators were above the 85% target except Availability.
75% of visitors understand the significance of the heritage place.	No data available for Fathom Five.	
Canadians, visitors and stakeholders actively support the integrity of heritage places.	Mostly Met	No measure currently in place to define success for this performance expectation. 139 stakeholders and partners actively contribute to park operations, decision-making, or other activities.

TABLE 9C

Visitor Experience

Performance Expectations	Rating	Results / Rationale
85% of visitors are satisfied and 50% are very satisfied with their visit.	No data available for Fathom Five.	
Minimize public safety incidents.	No data available for Fathom Five.	No measure currently in place to define success for this performance expectation.

Legend – Performance Rating (Treasury Board)	
Exceeded	More than 100% of the expected level of the performance was achieved
Met all	100% of the expected level of the performance was achieved
Mostly Met	80-99 % of the expected level of the performance was achieved
Somewhat Met	60-79% of the expected level of the performance was achieved
Not Met	Less than 60% of the expected level of the performance was achieved

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Management Plan Results

SUCCESS STORY

Multibeam sonar investigation of the submerged section of the Niagara Escarpment within the Fathom Five

Mapping a lakebed is as basic a need as mapping topography and vegetation cover is on land. Bathymetry, sediment type, and benthos are key components and structural elements of any lake or sea ecosystem, but given their submerged and remote nature, inventory and research is fraught with challenge. In 1993 a collaborative research program, the “Fathom Five Underwater Research Group” (FFURG), was formed. The core group includes Parks Canada, the Geological Survey of Canada, Canadian Hydrographic Service and the Ontario Marine Heritage Committee. FFURG’s main task is to produce a series of high resolution, geo-referenced digital basemaps for research, decision-making, public outreach, and monitoring purposes.

The original work was based on single beam sonar and physical charting. Leading edge technologies including multibeam sonar and underwater acoustic telemetry are now employed. These tools have allowed larger areas to be surveyed to a finer resolution. Early efforts focused on evidence of post-glacial lake levels, climate change, geological features, and archaeological artefacts. In addition, the project has allowed western science and its interpretations and traditional ecological knowledge to compliment each other with respect to submerged features and dramatic changes in water levels. Current efforts are focused on benthic mapping (abiotic and biotic) and the development of species-specific habitat models (e.g., shortjaw cisco, *C. zenithicus*).

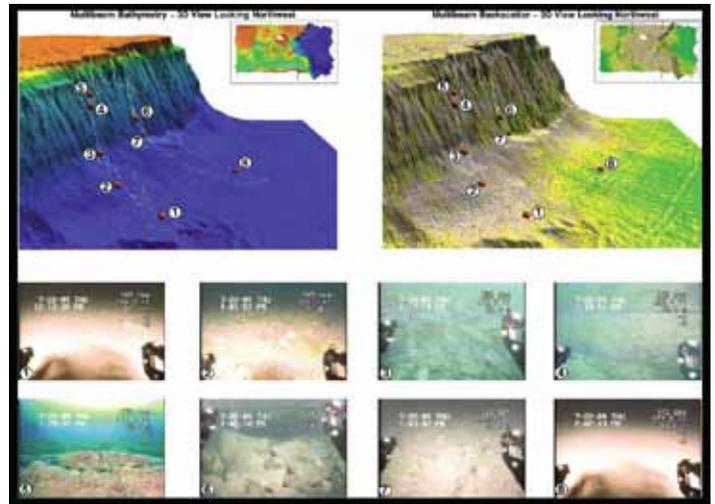


FIGURE 11
3D images of the bottom of Fathom Five obtained during the 2008 multibeam survey.

High resolution bathymetry and backscatter maps have been developed for a 144 km² area. With this data, three-dimensional mapping has been used for public education and outreach purposes. In addition, georeferenced ROV (e.g., ~ 404 km of lakebed video) and drop camera imagery (e.g., 80 sites) is integrated with the GIS. Preliminary results from the multibeam training and verification have confirmed that backscatter does characterize the bed in general physical and structural terms.

Management Plan Results

Approved by the Minister and tabled in Parliament in 1998, many of the objectives in the current park management plan have been accomplished.

Table 10 provides an overview of the status of the objectives in the 1998 management plan.

TABLE 10
Management Plan Results

OBJECTIVES	TARGETS	RESULTS
Fish Management	To ensure the long-term viability of natural fish stocks.	Fisheries management planning process with Ontario Ministry of Natural Resources (OMNR) and Saugeen Ojibway Nations collapsed in 2004. COSEWIC threatened species remain vulnerable to harvest. Zoning for protection of aquatic ecosystems is not completed (only islands have zone 1 protection).
Aquatic Ecosystem Monitoring	To conserve and protect the aquatic and terrestrial portions of Fathom Five as a representative area of Georgian Bay Marine Region. To work with partners in the public and private sector to demonstrate sustainable use of the Greater Park Ecosystem.	Program is about 50% complete. Coastal and Island indicators almost fully established. Offshore and Social indicators in development. Partnership with Environment Canada for water quality and OMNR for fish community is in progress.
Terrestrial Ecosystem Management	To preserve Fathom Five's islands in an undisturbed state.	East side of Flowerpot Island is the only site with trails and potential disturbance. Overall, we are meeting the target.
Aesthetic resource and Natural Areas	To preserve the natural shorelines of Fathom Five for both their aesthetic and ecological values.	Shoreline review and development approval process is being followed, however process does not respond to cumulative impacts.
Rehabilitation	To rehabilitate disturbed ecosystem components and processes, and to restore them as closely as possible to their natural state.	Offshore ecosystem is in a state of flux primarily due to history of over-fishing and introduction of invasive species. Efforts to reconcile or rehabilitate native lake trout, lake herring and deepwater cisco populations with established non-native species has not been completed.
Environmental Impact Assessment	To minimize the incremental degradation of the natural ecosystem and cultural resources in an exemplary fashion, in part by adhering to the mandatory requirements of the Canadian Environment Assessment Act (CEAA), the Environmental Assessment Process for Policy and Program Proposals, and other environmental assessment requirements as identified in National Directives.	Process followed as required (e.g., Flowerpot Island clean up).
Monitoring Impacts of Use	To determine the effects of visitor use, activities, and park operations on park resources, and to record the impacts in order to provide information that is valuable in determining appropriate management actions.	Currently no indicators or measures have been developed.
Natural Resource Information Base	To develop and maintain a comprehensive resource information base at the park.	Established informatics' tools and GIS and other database.

Ecosystem Analysis	To incorporate up-to-date information on the ecosystem components and processes into the planning process for Fathom Five ecosystem.	Sonar mapping provided high resolution lake bed bathymetry and composition data. Fish community assessment confirmed presence of Shortjaw Cisco (threatened) and limited recovery of Lake Trout populations. Coastal wetland assessment confirmed their Great Lake's significance. Confirmed that lake bed invertebrate community has collapsed. Studied the dynamic nature of the thermocline (fluctuates 10 m/16 hour period).
Research on Benchmark Ecosystems	To maintain Fathom Five as a protected ecosystem where non-destructive research is encouraged, to increase knowledge of the area, and to assist in managing the marine park through co-operation with outside agencies and experts.	The site has facilitated collaborative research including testing and comparing lake bed mapping techniques and as a study area for coastal wetlands. The site also initiated an annual Sources of Knowledge Forum to share research and participate on the Lake Huron Binational Partnership, including the recent Biodiversity Conservation Strategy.
Cultural Environment	To implement the comprehensive Cultural Resource Management Plan. To repatriate, whenever possible, significant marine-related artefacts that have been removed from Fathom Five. To consult both with local First Nations on all issues relating to First Nations history and cultural artefacts.	Shipwreck monitoring program currently under review. A cultural resource management plan has not been completed. Agreement with First Nations specific to cultural resource management has not been developed.
Enjoyment of Fathom Five	To foster pride in Fathom Five's heritage resources, and to engender a sense that all Canadians have a role to play in the protection of these resources. To ensure that visitors are aware that they are in a national marine conservation area, and to build a broader base of support for Fathom Five and the entire Parks Canada system of protected areas. To actively seek partners in the private and public sectors who share environmental stewardship and national park values, to provide services to visitors, and to enhance Parks Canada's communications programs when appropriate.	Visitor Centre is an exceptional visitor experience. More work is required to focus external relations specifically to Fathom Five National Marine Park.
Visitor Safety	To respond quickly and effectively to threats posed by environmental emergencies, and to minimize threats to life, the natural environment, and property.	A Memorandum of Understanding is required with Canadian Coast Guard for all marine search, and rescue including dive accidents.
Regional Integration	To co-operate with other federal, provincial, regional, and local agencies to achieve shared objectives and resolve matters of mutual concern. To establish partnership arrangements that augment and enhance Fathom Five's visitor programs. To improve local and regional residents' understanding of, and appreciation for, Fathom Five and its purpose, objectives, and management strategies by providing opportunities to become involved in the planning and ongoing management and operation of the marine conservation area.	Parks Canada has limited participation with lake-wide partners such as Environment Canada, Ontario Ministry of Natural Resources, Environmental Protection Agency, and National Oceanic and Atmospheric Administration. Opportunity to collaborate is high. Partnerships with local boat operators and the chamber of commerce are maintained.
Park Zoning	National Marine Conservation Areas Act requires at least two zones (protection and ecological sustainable use).	There are no protection zones within the aquatic ecosystems of Fathom Five.



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Key Issues

Key issues for Fathom Five National Marine Park are outlined below. These issues are supported in varying degrees by the condition and trends of the indicators presented in this report. All significant issues will be reviewed by Parks Canada staff in the management planning process to identify opportunities and concerns associated with each and to develop appropriate management direction for the national marine park.

Relationship with the Saugeen Ojibway Nations

The partnership between Parks Canada and the Saugeen Ojibway Nations has experienced successful initiatives related to species at risk and the development of First Nations exhibits and programming at the park. Along with the success, the partnership has been strained occasionally with issues related to resource use and other legal matters.

Ecological Sustainability

Ecological sustainability of the aquatic ecosystem of Fathom Five hangs in a balance, affected by past overexploitation of resources, invasive species, and climate change. Outstanding ecological sustainability issues include:

1. the long-term viability of natural fish stocks;
2. rehabilitation of disturbed ecosystem components and processes, as closely as possible to their natural state. This issue requires more applied research into native species tolerance to climatic stresses and the impact of invasive species such as round gobies, zebra and quagga mussels which have caused a dramatic alteration of Fathom Five aquatic ecosystems;
3. zoning of aquatic ecosystems of Fathom Five is pending. National Marine Conservation Areas Act requires at least two zones (protection and ecological sustainable use);
4. ownership of the marine park's waters and lakebed, park governance issues, and co-operation with

relevant federal, provincial, regional, and local agencies to achieve shared objectives and resolve matters of mutual concern.

Support for the implementation of the monitoring and reporting programs

It is important to note that many of the indicators and associated measures did not have sufficient data to justify rating the conditions and/or trends. It is worth noting that Agency performance expectations are supported by monitoring and reporting. Given this lack of information and the need to address the key issues in the development of management strategies, it is important to maintain a concerted effort to fill data gaps during the next planning cycle.

Cultural Resource Management

Despite earlier commitments, the Cultural Resource Management program has not been implemented to date. The shipwrecks of Fathom Five are well inventoried, but the monitoring program is being reviewed; terrestrial archaeological resources are poorly understood.

Social Science Research

Social indicators specific to Fathom Five are currently being developed. Until recently, visitation to both the national marine area and the Bruce Peninsula National Park was treated concurrently (with the exception of diver's registration), and little information regarding Fathom Five's pattern of visitor use is available at this time. Visitor use of the islands and offshore areas is not well documented or understood.

Analysis of the Visitor Information Program and Visitor Experience Assessment, for both protected areas, points to a few weaknesses. For example, visitors have expressed dissatisfaction with the Parks Canada web site, trip planning information, and entry fees.

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9

Glossary

Abiotic - The non-living components of an ecosystem (e.g., climate, water, bedrock).

Alvar - Alvar or pavement barren is a biological environment based on a limestone plain with thin or no soil and, as a result, sparse vegetation.

Archaeological - Related to studies of historical human cultures through the recovery, documentation, analysis, and interpretation of material culture and environmental data.

Artifact or artefact - is any object made or modified by a human.

Benthic animals - Invertebrate organisms (insects, molluscs, crustaceans) which live on, in, or near the lakebed or streambed.

Biota - The total collection of organisms of a certain area or a time period.

Biotic - The living components of an ecosystem (e.g., plants, animals, microorganisms).

Colonial waterbirds - These are birds nesting in large congregation, with nests in close proximity to each other, and at a particular location. Waterbird colonies often contain several species.

Companionway - A raised and windowed hatchway in the ship's deck, with a ladder leading below and the hooded entrance-hatch to the main cabins.

Ecological integrity - 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.

Ecosystem - A dynamic complex of biotic and abiotic elements interacting as a functional unit. Humans are included and complexity, uncertainty, unpredictability, and self-organization are recognized.

Ecosystem function - The process through which the constituent biotic and abiotic components of ecosystems change and interact, including biochemical (e.g., nutrient, energy flow) and self-organizing processes.

Ecosystem structure - The way in which biotic and abiotic components of an ecosystem are organized (e.g., food webs, habitats, species composition).

Endemic - A species belonging or native to a particular geographic area, or environment.

Fauna - All of the animal life of any particular region or time.

Fluctuation - The rise and fall in water levels.

High water mark - The highest level reached by a body of water that has been maintained for a sufficient period of time to leave evidence on the landscape.

Hydrology - The study of the movement, distribution, and quality of water.

Indicator - A nationally or bio-regionally consistent summary reporting statement that provides a comprehensive synopsis of each component of the Agency mandate. It is based on a combination of data, measures, and critical success factors that provide a clear message about current conditions and the change since the last measurement.

Invasive species - Non-indigenous species (e.g. plants or animals) that adversely affect the habitats they invade.

Invertebrate - An animal without a backbone. The group includes 95% of all animal species.

Lithic - A stone tool made partially or entirely out of stone.

Major ions - Chloride, sodium, sulphate, magnesium, calcium, potassium

Maritime - refer to things related to the Great Lakes, sea or ocean, sailors or sailing.

Measure - Parks Canada defines “measure” as any data, surveys or other measurements that present conditions or trends.

Microgram - A unit of mass equal to 1/1,000,000 of a gram.

Multibeam sonar - A sonar using multibeam acoustic sensors or echosounders.

Mitigation - A process or program intended to offset known impacts to an existing natural resource.

Nutrients - A nutrient is a chemical that an organism needs to live and grow or a substance used in an organism’s metabolism which must be taken in from its environment

Partners - Groups or individuals with separate identities and independent accountabilities engaged in a working relationship based on mutual benefit and a clear agreement that sets out shared goals and objectives and the terms of the arrangement.

Protection - Maintenance of an ecosystem or cultural resource in a natural state through regulatory, management, and education programs. May be synonymous with preservation or conservations.

Sediment - Naturally-occurring material that is broken down by processes of weathering and erosion, and is subsequently transported by the action of fluids such as wind, water, or ice, and/or by the force of gravity.

Shipwreck - The remains of a ship that has wrecked, it having either been sunk or beached.

Side-scan sonar - A category of sonar system that is used to efficiently create an image of large areas of the sea floor.

Saugeen Ojibway Nations - The Saugeen Ojibway Nation is comprised of two First Nations communities living in the Bruce Peninsula area: the Chippewas of Nawash Unceded First Nation, and the Chippewas of Saugeen First Nation

Species - A group of organisms capable of reproducing and producing fertile offspring, and separated from other such groups with which interbreeding does not happen.

Species at Risk - Species defined as special concern, threatened, endangered, extirpated, and extinct by the Species at Risk Act..

Stakeholders - Groups or individuals that have a vested interest in park operations because they can affect and are affected by the park’s policies and decisions.

Sustainable use - Use in a manner that meets the needs of present and future generations without compromising the structure and function of ecosystems.

Taxonomic - Refers to a classification of organisms into groups based on similarities of structure or origin.

Threshold - The point at which a relatively small change in external conditions causes a rapid change in an ecosystem. When an ecological threshold has been passed, the ecosystem may no longer be able to return to its state. The trespassing of ecological threshold often leads to rapid change of ecosystem health.

Trend - A tendency to extend, incline, or veer in a specified direction.

Trophic - The trophic level of an organism is the position it occupies on the food chain.

Turbidity - is the cloudiness or haziness of a fluid caused by individual particles that are generally invisible to the naked eye. The measurement of turbidity is a key test of water quality.

Visitor Experience Assessment (VEA) - The VEA is a diagnostic tool that assists the park staff in assessing the current state of the visitor experience offer from the perspective of the visitor. This 2-day workshop brings together a cross-functional team to examine the current state of visitor experience opportunities.

Visitor Information Program (VIP) - A program implemented by Parks Canada to collect information about visitors to its national parks, national historic sites, and national marine conservation areas. The program is designed to gather information on various performance and service indicators required for effective business and management planning.

Wetland - An area of land whose soil is saturated with moisture either permanently or seasonally. Such areas may also be covered partially or completely by shallow pools of water. Wetlands include swamps, marshes, bogs and fens.

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APPENDIX 1

Legend for condition and trend rating

Condition		
Good		Good, effective, or not currently impaired
Fair		Fair, or minor to moderate impairment. Requires improvement.
Poor		Poor, ineffective, seriously impaired or a significant attribute missing (whether related to condition or selected management practices).
Not Rated		Not rated or not reported on because the information is not available.

Trend		
Improving		The state of the indicator/measure has improved since the last assessment.
Stable		The state of the indicator/measure has not changed since the last assessment.
Declining		The state of the indicator/measure has declined since the last assessment.
Not Rated		No trend is available.