

## World Heritage Sites

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## GROS MORNE NATIONAL PARK CANADA

*Gros Morne is situated on the west coast of Newfoundland island and contains 60% of its flora. The Park provides a rare illustration of the process of continental drift, where deep ocean crust and the rocks of the earth's mantle are exposed. Glacial action has resulted in spectacular scenery, with coastal lowland, alpine plateau, fjords, glacial valleys, sheer cliffs, waterfalls and many pristine lakes.*

### COUNTRY

Canada

### NAME

Gros Morne National Park

### NATURAL WORLD HERITAGE SITE

1987: Inscribed on the World Heritage List under Natural Criteria vii and viii.

### STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]

The UNESCO World Heritage Committee issued the following statement at the time of inscription:

#### Statement of Significance

Gros Morne National Park illustrates some of the world's best examples of the process of plate tectonics. Within a relatively small area are classic, textbook examples of monumental earth-building and modifying forces that are unique in terms of their clarity, expression, and ease of access. The property presents the complete portrayal of the geological events that took place when the ancient continental margin of North America was modified by plate movement by emplacement of a large, relocated portion of oceanic crust and ocean floor sediments. The park also presents an outstanding demonstration of glaciation in an island setting. The fjords, waterfalls and geological structures of the park combine to produce a landscape of high scenic value.

**Criterion (vii):** Gros Morne National Park, an outstanding wilderness environment of spectacular landlocked, freshwater fjords and glacier-scoured headlands in an ocean setting, is an area of exceptional natural beauty.

**Criterion (viii):** The rocks of Gros Morne National Park collectively present an internationally significant illustration of the process of continental drift along the eastern coast of North America and contribute greatly to the body of knowledge and understanding of plate tectonics and the geological evolution of ancient mountain belts. In glacier-scoured highlands and spectacular fjords, glaciation has made visible the park's many geological features.

### IUCN MANAGEMENT CATEGORY

II National Park

### BIOGEOGRAPHICAL PROVINCE

Canadian Taiga (1.04.03)

### GEOGRAPHICAL LOCATION

Located on the western coast of the Great Northern Peninsula of Newfoundland, facing the Gulf of St Lawrence some 150 km east of mainland Canada and reaching up into the Long Range Mountains. The nearest larger town is Deer Lake 76 km southeast. The boundary is marked by a series of Canada Lands Survey posts and the ordinary low water mark of the Gulf of St Lawrence. Situated between 49° 18' to 49° 59'N and 57° 25' to 58° 10'W.

## **DATES AND HISTORY OF ESTABLISHMENT**

1973: Established under a Federal/Provincial Agreement between the Governments of Canada and of Newfoundland & Labrador;

1983: The same authorities amended the agreement, returning approximately 9,300 ha to the province;

1986: The Park formally established under the National Parks Act.

## **LAND TENURE**

Federal government. Clear title to all lands was acquired in 1984 by the Provincial government, and subsequently transferred to the Federal government. Administered by Parks Canada (Parks Canada, 1986)

## **AREA**

180,500 ha

## **ALTITUDE**

Sea level to 806m (Gros Morne Mountain)

## **PHYSICAL FEATURES**

The Park comprises two distinct physiographic components: coastal lowland and alpine plateau. The major ecological units include coastal plain, piedmont moraines, the frontal slopes and upland areas of the Long Range mountains, the southern hills, and the Klippe Complex. The marine areas included in the Park comprise the inner portion of St Paul's Inlet, inter-tidal zones and estuaries (Moorhead *et al.*, 1971). The shoreline features beaches, steep cliffs of unconsolidated deposits, and dune formations up to 30m in height which extend inland for some 1.6 km in a number of places. The gently sloping coastal plain, which is bordered to the east by the Long Range fault scarp, extends inland for 4 to 13 km and along the coast for about 55 km. It is composed largely of limestone, and slopes gently seaward in a series of steps, defined by faulting in the underlying Ordovician rock (Moorhead *et al.*, 1971). Meandering creeks, eutrophic bog lakes, dead ice moraine deposits, erratics and small patches of isostatically raised beach deposits are found on the plain (Bouchard & Hay, 1976; Moorhead *et al.*, 1971). A number of steep-sided glacial valleys cut through the Long Range scarp face, forming deep oligotrophic lakes, with vertical cliffs up to 685m high.

A large proportion of the eastern central Park is covered by an upland alpine plateau with perched lakes, bare rock and valleys. The serpentine hills in the southwest comprise ultramafic igneous rocks, which, due to a high heavy metal content are almost bare of plants. They form the northern margin of the Bay of Islands complex which is famous for its exposures of geologic interfaces and contorted rock formations. There are eight major drainage systems which, due to local topography, are all less than 34 km long and tend to flow east or west. A number of waterfalls are fed in the summer by snow-melt at higher altitudes. The Park is geologically diverse with areas of Ordovician sedimentary rocks overlying Precambrian granite and gneiss, Palaeozoic serpentinised ultra-basic rocks, gabbros, volcanic and lower Palaeozoic sedimentary rocks. Exposed oceanic crust, mantle, a section of ancient Mohorovicic discontinuity, and other distinctive geological features are also visible. The evolution of the North Atlantic Basin and much more recent glacial activities can be determined from these relicts. There is also an unusually complete palaeontological sequence which has been proposed as the world stratotype for the Cambrian-Ordovician boundary (Parks Canada, 1986; 1990).

## **CLIMATE**

The climate is cool: wet maritime at sea level and sub-arctic at higher altitudes, and is influenced by the adjacent ocean, by the strong prevailing south-westerly winds from the Gulf of St Lawrence and a continual moisture excess (Bouchard & Hay, 1976). Mean annual air temperature is 3°C with a mean maximum 15.5°C in July and minimum of -8.4°C in February; the highlands are usually some 2 to 4°C cooler. Mean annual precipitation for the area includes 1,397 mm of rain and 3,281mm of snow, with 10 to 30 days of fog (Moorhead *et al.*, 1971). Sea ice forms in winter and the onset of both spring and autumn is delayed by the oceanic influence.

## **VEGETATION**

The wide range of bedrock types and resulting soils, and of exposures and altitudes next to the ocean have created the conditions for some 36 distinct vegetation types and communities, with 711 vascular species and 401 bryophytes, representing about 60% of Newfoundland's insular flora. There are also

over 400 species of lichens. Bouchard and Hay in 1976 described many of these communities. They are, from the coast: intertidal saltmarsh, active dunes with white spruce *Picea glauca* and coastal tuckamore (wind-shaped trees), cliffs with prostrate spruce and balsam fir *Abies balsamea*. Inland communities include sphagnum bogs, riverine alder *Alnus* sp. thickets, sedge meadows of a mosaic of *Carex* spp. with American larch *Larix laricina* scrub. Black spruce *P. mariana* dominates wet, oligotrophic sites and balsam fir is found in more protected and mesic areas. The coastal plain black spruce and dwarf American larch scrub colonises exposed moraines, giving way to heath barrens in the more exposed and unstable areas with alpine bearberry *Arctostaphylos alpina*, alpine azalea *Loiseleuria procumbens* and pincushion plant *Diapensia lapponica*.

The scarp cliffs support a mixed deciduous and spruce-fir forest which becomes stunted at the treeline. Tundra vegetation has developed on the plateau above this and varies from small areas of coniferous forest and stunted krummholz forest to bare shattered rockfields (felsenmeer). Wet meadows between rock outcrops include grasses, sedges, mosses, pitcher plant *Saracenia purpurea*, sundew *Drosera* sp. and purple fringed orchid *Habenaria psycodes*. Serpentine barrens with unusual plants have developed on the serpentine peridotite rock tablelands in the south, and alpine communities are found on the Bonne Bay Highlands (Moorhead *et al.*, 1971). Close to 100 vascular plant taxa have been identified as significantly rare (A. Bouchard, pers. comm., 1994). The distribution of phytogeographical groups and life-form categories of the vascular flora have been studied, establishing relationships between plant distributions, life-forms and vegetation types (Bouchard *et al.*, 1987; 1991).

## FAUNA

The faunal diversity of the site resembles that of an oceanic rather than continental-shelf island and is markedly reduced compared to the mainland (Moorhead *et al.*, 1971). There are 30 species of mammals such as moose *Alces alces*, brown bear *Ursus americanus hamiltoni* and polar bear, *Ursus maritimus*. However a number of species scarce in Canada are also found, including American marten *Martes americanus atrata*, lynx *Lynx canadensis subsolanus*, caribou *Rangifer tarandus caribou*, and arctic hare *Lepus arcticus bangsii*. The more common marine mammals observed from the Park, albeit with diminishing frequency in recent years include finback whale *B. physalus* (EN), pilot whale *Globicephala melaena*, minke whale *Balaenoptera autorostrata* and harbour seals *Phoca vitulina* (Moorhead *et al.*, 1971). The avifauna comprises 239 arctic, boreal and pelagic species, with strays from the mainland, the north-west Atlantic and Europe (Parks Canada, 1986). Breeding species number at least 105 and the Park is a significant breeding site for harlequin duck *Histrionicus histrionicus*, blackpoll warbler *Dendroica striata*, common tern *Sterna hirundo*, and arctic tern *S. paradisaea*, a nesting site for bald eagle *Haliaeetus leucocephala*, rock ptarmigan *Lagopus mutus* and American tree sparrow *Spizella arborea*, and a stopover for migrating shore birds. Anadromous Atlantic salmon *Salmo salar* and arctic char *Salvelinus alpinus* are found in Park waters and also in permanent freshwater form in certain landlocked lakes in the Long Range Mountains (Parks Canada, 1986).

## CONSERVATION VALUE

The primary value of the Park is in its biotic, visual, geological, anthropological and recreational assets. The Park is internationally acclaimed for its complete portrayal of the geological events that took place when the ancient continental margin of North America was reconfigured by plate movement, and is here exposed. It also represents an outstanding demonstration of glaciation in an island setting. Its cliffs, fjords lakes and waterfalls are spectacular. The Park lies within a WWF Global 200 Marine Eco-region.

## CULTURAL HERITAGE

There are a number of archaeological sites in the Park and human habitation can be traced back to the Maritime Archaic Indians (4,500-3,000 years ago) and the Dorset Eskimos (1,800-1,200 years ago). Europeans settled the area from the late 18th century and initially relied upon fishing, and from the 1900s on commercial logging. Despite developments and modernisation, the coastal enclaves retain a distinctive language and cultural tradition (Moorhead *et al.*, 1971).

## LOCAL HUMAN POPULATION

There are no residents in the Park. The boundary excludes eight coastal settlements with a total population of 4,351 (StatsCan, 2001). The principal occupations are seasonal inshore fishing, subsistence agriculture, logging and hunting. In recent years the local employment base has diversified to include tourism.

## **VISITORS AND VISITOR FACILITIES**

An estimated 125,000 people visited the Park in 2001, but revenue figures are not available. In addition to 120 km of paved roads, a system of hiking trails allows access to more remote areas. The kayaking and climbing are also good. A number of campsites, with a total of 282 sites, are located in the park, and hotels and other services are available in the adjacent communities. Two concession-run boat tours operate. Information is available at a number of sites, including the administrative and visitor reception centre in Rocky Harbour. Facilities are also available for outdoor activities. An interpretive program is offered, and educational materials and extension services are provided (Parks Canada, pers. comm., 1995). A popular account of the Park is given by Nicol and Mace (1989).

## **SCIENTIFIC RESEARCH AND FACILITIES**

Bouchard & Hay (1976) provide a historical account of floristic studies on the western coast of Newfoundland. The Park has a resource conservation section of scientists, wardens and technicians who conduct original research and monitoring and also work with the academic community in research aimed at park management in the context of the greater ecosystem. The research and monitoring program is serviced by office and laboratory facilities, by logistical support and equipment. Memorial University at St John's has a marine biology research centre near the Park, with a full program of research into the local marine environment. The monitoring program focuses on the measuring of biodiversity, ecosystem function and stressors on the National Park. Important research themes include rates of landscape change, the impacts of habitat loss and fragmentation, conservation of genetically distinct populations and the recovery of species at risk (Parks Canada, *in litt.*, 2002). A research description was completed in 1990, with updates specific to vegetation and freshwater fish resources in 1994, and limnology in 1995 (Parks Canada, pers. comm., 1995). A bibliography of recent research is provided in the World Heritage site nomination, and published material is available from the Park Superintendent, Rocky Harbour (Parks Canada, 1986).

## **MANAGEMENT**

Legal protection is given the Park by a number of federal and provincial statutes including the federal Forestry Development and Research Act, the Fisheries Act, the Migratory Birds Convention Act and the provincial Newfoundland Wildlife Act. Under these acts, felling, rabbit snaring and aggregate extraction are permitted in controlled areas for domestic consumption by a limited number of local communities. Long term management objectives are: to preserve and protect natural resources, the geological features, its ecosystems and processes; to protect and preserve archaeological, historical and cultural landscapes and resources; to provide interpretive and extension material and recreational facilities; to ensure public safety and to integrate the park with activities in its environs. Management has focused on the development of roads, trails and basic facilities (Parks Canada, 2002). The Park is zoned into four zones: Zone I Special Preservation Areas (12,645 ha), in which visitor use is restricted; Zone II Wilderness Areas (110,105 ha), where limited extensive visitor use is allowed; Zone III Natural Environment Areas (55,955 ha), which are designated for domestic resource harvesting and in which visitor use is discouraged; and Zone IV General Outdoor Recreation Areas and Park Roads (1,805ha), for intensive use. In addition, a number of small Environmentally Sensitive Sites, with natural or cultural interest have been identified (Parks Canada, n.d.).

## **MANAGEMENT CONSTRAINTS**

The Park's landscape and natural resources have been disturbed by previous land uses and hunting has reduced wildlife populations. A number of exotic species have been introduced to the detriment of the indigenous fauna. Nevertheless protection since 1973 has seen populations increase with the exception of American marten which has disappeared from the Park (Parks Canada, 1986) and a recent decline in caribou numbers (Carr, 2005) The activities of local communities will continue to disturb some areas and the designation of zone III areas is an attempt to reduce land-use conflicts. While extensive recreation poses only a slight threat to the Park, intensively used areas incur some environmental impacts particularly the use of snowmobiles which disturb animals and disrupt their habitats (Carr, 2005). The Park administration is alert to the occurrence of habitat loss and fragmentation, to over-use of the resources by both visitors and local people, allowed for by the zoning, and to polluting activities, including its own. Introduction of alien species is monitored by the use of baseline plots (Parks Canada, 2002). There are no other significant management constraints, but several management activities, such as Parks Canada's environmental assessment and review process aim to minimise impacts (Parks Canada, n.d.).

## STAFF

A superintendent is assisted by approximately 100 full time and seasonal staff, dedicated to Park Canada's goal of permitting recreational use while maintaining the Park's ecological integrity. The staff includes a capability for resource use conservation and land-use planning to ensure that community-based decisions use the best information available. A service centre in Halifax, Nova Scotia, provides management services and assistance. A number of recreational facilities are provided by private operators (Parks Canada, 2002).

## BUDGET

Canadian \$6.6 (US\$5,385,110) million per annum for operations and maintenance. The bulk of these funds comes from federal sources and revenue generation (Parks Canada, 2002).

## LOCAL ADDRESSES

Field Unit Superintendent, Western Newfoundland and Labrador Field Unit, Parks Canada, P.O.Box 130, Rocky Harbour, Newfoundland, Canada, AOK 4N0.

Parks Canada, 25 Eddy Street, Hull, Quebec, K1A 0M5.

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## DATE

June 1987. Updated 5-1990, 7-1995, 12-2005, May 2011.