World Heritage Sites

Protected Areas and World Heritage

WOOD BUFFALO NATIONAL PARK
CANADA

Situated on the boreal plains of north-central Canada, this park of 44,802 sq.km contains North America's largest population of wild bison and the summer nesting grounds of the endangered whooping crane. The Park also contains, at the mouth of the Peace and Athabasca rivers, the world's largest inland delta, which in the autumn becomes a staging point for over a million waterfowl.

COUNTRY
Canada

NAME
Wood Buffalo National Park

NATURAL WORLD HERITAGE SITE
1983: Inscribed on the World Heritage List under criteria vii, ix and x.

STATEMENT OF OUTSTANDING UNIVERSAL VALUE [pending]
The UNESCO World Heritage Committee issued the following statement at the time of inscription:

Statement of Significance
Wood Buffalo National Park is an outstanding example of ongoing ecological and biological processes, encompassing some of the largest undisturbed grass and sedge meadows left in North America, and it sustains the world's largest herd of wood bison, a threatened species. The park's huge tracts of boreal forest also provide crucial habitat for a diverse range of other species, including the threatened whooping crane. The continued evolution of a large inland delta, salt plains and gypsum karst add to the park's outstanding values.

Criterion (vii): The great concentrations of migratory wildlife are of world importance and the rare and superlative natural phenomena include a large inland delta, salt plains and gypsum karst that are equally internationally significant.

Criterion (ix): Wood Buffalo is the most ecologically complete and largest example of the entire Great Plains-Boreal grassland ecosystem of North America, the only place where the predator-prey relationship between wolves and wood bison has continued, unbroken, over time.

Criterion (x): Wood Buffalo contains the only breeding habitat in the world for the whooping crane, an endangered species brought back from the brink of extinction through careful management of the small number of breeding pairs in the park. The park's size (4.5 million ha), complete ecosystems and protection are essential for in-situ conservation of the whooping crane.

INTERNATIONAL DESIGNATION
1982: The Peace-Athabaska Delta (321,300ha) and the Whooping Crane Summer Range (1,689,500ha) both designated Wetlands of International Importance under the Ramsar Convention.

IUCN MANAGEMENT CATEGORY
II National Park

BIOGEOGRAPHICAL PROVINCE
Canadian Taiga (1.04.03)

GEOGRAPHICAL LOCATION
On the state boundary between Alberta and the Northwest Territories at 58°00'-60°40'N, 111°00-115°50'W.

DATES AND HISTORY OF ESTABLISHMENT
1922: Designated a National Park (2,600,000ha) under the Forest Reserves and Parks Act;

1926: Extended to its present area, which covers all but 230,000ha of the Crane summer range;

1964: The National Parks arm of the Department of Internal Affairs assumed authority over the Park.

LAND TENURE
Government of Canada. Administered by Parks Canada.

AREA
4,480,700 ha.

ALTITUDE
217 to 945m

PHYSICAL FEATURES
The Park stretches across a vast undisturbed wilderness of the Northern Boreal Plains, crossed by the Peace River which joins the Athabaska River in a huge conjoint delta to form the Slave River which flows north along the eastern boundary towards the Great Slave Lake. The Park has five main topographic areas: the forested glacially eroded Alberta Plateau; the low Birch and Caribou Uplands in the south and west respectively; glaciated plains of gypsum karst in the northeast; the delta in the southeast; and alluvial river lowlands along the eastern border.

The Buffalo and Lake Robertson Plains are characterized by flat poorly drained topography between 210-300 metres above sea level, underlain by impervious shale and discontinuous permafrost, resulting in a mosaic of wide areas of muskeg bog, shallow lakes, meandering streams and boreal forest. The limestone uplands of the Birch and Caribou plateaus have been eroded by rivers into long incised gorges which reveal dense fossils and cross-sections through the bedrock, and end in wide alluvial fans.

The great delta on Lake Athabasca and Lake Claire forms the largest inland freshwater delta in the world, from three rivers, the Athabaska (1,970 sq.km), the Peace (1,684 sq.km) and the Birch (168 sq.km). The delta, with the lowlands and floodplains of the Peace, Athabasca and Slave Rivers exemplify classic fluvial landforms, with a complex series of meander scars, oxbow lakes, former river terraces, and well-formed birdsfoot deltas. Downstream the Slave River lowland is a well-drained plain lying on porous bedrock with an extensive karst topography. The uniform relief, porosity and solubility of the bedrock result in a drainage primarily vertical and percolating rather than flowing across the surface. This has created karst landforms in areas of gypsum bedrock which include sinkholes, sunken valleys, caves, submerged rivers, classic small anticlines and a complex recharge-discharge hydrology of swallow holes and cold springs, some being saline. Salt mounds build up round saltwater sprigs and during dry periods, the mudflats of one plain in the northeast are dominated by mineral evaporites, forming a 250 sq.km area of salt plains unique in Canada.

Geologically the plain is underlain by a thin sequence of Middle and Upper Devonian sedimentary rocks with glacial deposits of varying thickness covering much of the area. The plateaus are of Lower and Upper Cretaceous age in which gypsum and anhydrite are abundant and minor amounts of salt, potash, dolomite and limestone occur. The eastern boundary of the Park is almost coincident with the Precambrian Canadian Shield - Palaeozoic contact along the Athabasca and Slave Rivers.

CLIMATE

The climate is boreal continental with long cold winters and short warm summers. Temperatures range from daily means of -25°C in January (when the temperature can fall below -40°C) to 16°C in July. The annual precipitation is about 310mm, annual evaporation is 410mm though snowfalls decreased between 1994 and 2004, drying the delta habitat of much wildlife and diminishing the spring floods. This moisture deficit, coupled with an average 40 thunderstorms per season, puts the Park into an extreme forest-fire weather zone. The brief frost-free period extends from early June to early September but much of the area is permanently underlain by discontinuous permafrost. The length of daylight between December and January is 7 hours but the midsummer days are over 20 hours long. The Aurora borealis is often visible.

VEGETATION

Most of the Park is a flat mosaic of boreal forest and taiga plain of muskeg, meandering streams, shallow lakes and bogs. Vegetation is typical of the boreal forest with white spruce *Picea glauca*, black spruce *P. mariana*, jack pine *Pinus banksiana* and tamarack *Larix laricana* predominant. Many watercourses have stands of balsam poplar *Populus balsamifera* and some uplands have nearly pure stands of aspen *P. tremuloides*. Extensive forest stands of white spruce cover the banks of the Peace, Athabasca and Birch Rivers. Lodgepole pine *Pinus contorta* var. *latifolia* occurs along the slopes of the Cretaceous plateau on the western edge of the Park and on its upper levels it supports a spruce-willow-birch upland tundra community. Some areas of prairie occur, the dominant grass species being *Calamagrostis canadensis*, *Deschampsia caespitosa*, *Poa* spp. with sedges, *Carex* spp. The biologically productive Peace-Athabasca delta has marshes of cat-tail *Typha latifolia* and sedges *Carex rostrata*, *C. atheroides* and *C. aquatilis*. Shrublands of willow *Salix* spp. and alder *Alnus* sp. occur where wet marsh soils meet drier forest soils. There is also extensive muskeg in the west and north, an association of black spruce, sphagnum moss and northern heath plants. Halophytic vegetation more characteristic of seashores is found round the salt flats, for instance red samphire *Salicornia europaea*. The Park contains some of the largest undisturbed grass and sedge meadows in North America. About 1% of the park burns each year, about average for boreal forests in this part of Canada.

FAUNA

The Park was created to protect the American bison *Bison bison*, some 60 million of which had been reduced to about 600 during the 19th century in the campaigns against the native people who depended on them. It is now a group of the largest free-roaming, self-regulating herds in existence, but they are hybrids between two sub-species, the native wood bison *Bison bison athabascae*, and the plains bison *Bison bison bison*, introduced from further south in the 1960s, together with disease. A small disease-free herd discovered in the Park was moved in 1965 to Elk Island National Park near Edmonton. The herd in the Park numbered 10,832 in 1971, declined to 2,137 in 1999, but currently numbers some 5.600 (Parks Canada, 2005). Its preferred foraging habitats are the vast grass and sedge plains, which are also one of the few places where the predator-prey relationship between wolves and bison still exists. A total of 46 other mammal species have been recorded including black bear *Ursus americanus*, Arctic fox *Alopex lagopus*, grey wolf *Canis lupus*, Canada lynx *Lynx canadensis*, woodland caribou *Rangifer tarandus caribou*, moose *Alces alces*, snowshoe hare *Lepus americanus*, muskrat *Ondatra zibethica*, American beaver *Castor canadensis* and American mink *Neovison vison*. Occasionally animals more common to southern Canada are seen, such as red fox *Vulpes vulpes*, North American porcupine *Erithizon dorsatum* and white-tailed deer *Odocoileus virginianus*. The caves of the karst lands provide essential hibernation sites for bats.

227 bird species have been recorded, most being species characteristic of all boreal forest habitats. But the salt plains in the north-central area of the Park are the last remaining breeding site of the whooping crane *Grus americana* (EN), discovered there as late as 1954. In 1995 there were 40 breeding pairs out of 140 individuals summering in the Park (Parks Canada, pers. comm.). By 2005 these had increased to 220 and in 2006 176 chicks were seen (Drisdelle). Protection and intensive management of this species, and protection of their wintering grounds in Texas, 3,900 km south, may have averted their extinction. Other species include American white pelican *Pelecanus erythrorhynchos*, peregrine falcon *Falco peregrinus*, bald eagle *Haliaeetus leucocephalus*, great grey owl *Strix nebulosa*, snowy owl *Nyctea scandiaca*, willow ptarmigan *Lagopus lagopus*, redpoll *Acanthis* spp., crossbill *Lorix* spp. and boreal chickadee *Parus hudsonicus*. As many as 400,000 geese, ducks and swans migrate through the area in the spring, and a million pass through the delta in the fall. It is an important area for snow geese *Anser caerulescens*, greater white-fronted geese *A. albifrons* and Canada geese *Branta canadensis*, whistling swan *Cygnus columbianus*, diver *Gavia* spp., all seven species of North American grebe (Podicipedidae) and 25 species of duck (Anatidae).

Reptiles and amphibians are very limited in number. Canadian toad *Anaxyrus hemiophrys*, northern leopard frog *Rana pipiens* and red-sided garter snake *Thamnophis sirtalis parietalis* reach their northern limits here. Boreal chorus frog *Pseudacris maculata* and wood frog *Lithobates sylvaticus* are also found in aquatic habitats. The fish fauna has been poorly studied, although there is a wide variety of aquatic habitats. Thirty-six species have been recorded to date, four of them introduced. The inconnu *Stenodus nelma*, an uncommon but circumpolar species, spawns in Buffalo Lake, and the delta is an important spawning area for sport fish. Preliminary information suggests that pearl dace, fathead minnow and Iowa darter may be at their northern limit. Sticklebacks found in the karst lakes lack pelvic girdles, a unique adaptation to this environment.

CONSERVATION VALUE

Wood Buffalo National Park is the largest game preserve in North America. It protects both its largest population of wild bison and the last nesting place for the internationally threatened whooping crane. It also contains the world's largest inland delta, the biologically rich Peace-Athabasca delta. It also lies within a WWF global eco-region and contains most of two Ramsar wetland sites.

CULTURAL HERITAGE

A series of different hunter-gatherer cultures have occupied the area continuously for more than 8,000 years and a few families still preserve this way of life in the longest existing tradition of native subsistence use in Canada. They preserve a holistic view of the world with man in a symbiotic relationship with nature. The Beaver and Slave tribes moved west in the 18th century and the Cree and Chipewyan gained ascendancy. In the late 18th century European explorers, hunters and fur traders sent out by the rival North West and Hudsons Bay Companies began to exploit and settle the region, integrating with the native people. The former company founded Fort Chipewyan in 1788 (the first settlement in Alberta), and the latter, Fort Smith in 1874.

LOCAL HUMAN POPULATION

The local Cree and Chipewyan tribes are now organised into the Mikasew-Cree First Nation and exercise fishing, hunting and trapping rights in the Park. There are up to eleven native stakeholder groups with interests in the Park's resources and six First Nation land selections have been set apart as reserves within the Park. Approximately 6,600 people live in the three communities of Fort Smith (population 2,185 in 2001) in the northeast, Fort Chipewyan (1,200) 228km south of it in the southeast, and Hay River, 30km north of the Park border. The aboriginal community of Garden Creek (350) is located on the Peace River 7km inside the southwest side of the Park (Park Canada, 2004). This area will be excised and made a reserve for the Little Red River Cree First Nation. In 1995 approximately 600 permits were issued for hunting and trapping and some trapping permit holders live in the Park during the winter (Parks Canada, pers. comm., 1995). The indigenous management practices, with a higher population and modern techniques may lead to some overharvesting but are

inherently more sustainable than those of the incomers, ranchers and former Park staff who have heavily criticised them (Nepal, 2000).

VISITORS AND VISITOR FACILITIES

6,200 people are said to have visited the Park in 1994. Between 1998 and 2003 visitation averaged around 1,200, and in 2003 the total number was 1,296. All visitors must check in and out at checkpoints. Supplies, services and accommodation are available in the towns of Hay River and Fort Smith. There are visitor centres at Fort Smith and Fort Chipewyan. The Pine Lake Road runs south into the interior of the Park, passing Salt River where there are four karstland interpretive hiking loops and two longer trails, and the Angus Tower day use area. Rainbow Lake trail and Pine Lake 60 km south of Fort Smith have 36 campsites with group camping at Kettle Point. Some 70 km beyond its terminus at Peace Point is Sweetwater Station on the northern edge of the delta. Canoe trail guides to nine river waterways, boating, fishing, cross-country skiing and snowshoeing are available. Native guide also provide expert local knowledge. The main access is from the MacKenzie Highway and railhead at Hay River 280km northwest of Fort Smith. A winter ice track exists between Fort Smith, Fort Chipewyan and Fort MacMurray 200km south of the Park, but Fort Chipewyan is normally only accessible by air or water. The Park is open May to September but from June to August, clouds of mosquitoes make life uncomfortable (Parks Canada, 2006).

SCIENTIFIC RESEARCH AND FACILITIES

The park is an outstanding area of boreal biological evolution. Studies are used to inform management decisions, especially on whooping crane ecology and restoration and on the population, condition, movements and control of disease in bison. There are past and ongoing studies into water quality and quantity, flooding, the ecology of the delta, wetlands ecology, timber-restoration, and karst topography. The size and condition of the bison herd is monitored twice a year in winter when the herds are more easily seen and approached.

MANAGEMENT

The Park, some 300km from north to south by between 200 and 300km west to east, is one of the five largest World Heritage properties. It is managed by Parks Canada under the regulations of the National Parks Act and National Parks Policy which provide comprehensive operational, development and management guidelines. A management plan incorporating these was published in 1982, amended 1984 with a zoning plan which has designated most of the Park as a Special Preservation Area (Zone I) or wilderness (Zone II) (Parks Canada, 1993). This plan is being updated with local aboriginals, incorporating their knowledge of the ecology of the area and of fur-bearing species (Parks Canada, 2004). The special preservation zones include the whooping crane nesting habitat, a bison grazing and calving area in the delta, examples of karst landforms, and significant archaeological sites. A natural resource management program is followed, of resource inventorying, studies for and preparation of resource management plans. The grass plains are regularly subject to prescribed burning. All proposed developments and management actions are subject to an environmental assessment and review process. By traditional right, local residents are allowed to fish, hunt and trap game, except for buffalo and other endangered species; and sport fishing is allowed under permit, all subject to Park regulations (Parks Canada, 1994). Commercial logging rights were rescinded in 1992 after a lawsuit brought by a conservation organisation (Environment Canada, 2006). Indigenous participation in management is now encouraged although non-native people resent the natives' traditional rights and many conservationists disapprove of any use of a wilderness park (Nepal, 2000). Regular monitoring of 17 aspects of the park is done with some 13 academic, government and technical authorities. The most important concern the bison herds, floods and waterquantityvegetation change, and the populations of cranes, moose and peregrine falcions.

MANAGEMENT CONSTRAINTS

From 1922 to 1964, the Park was not administered by the National Parks Department, and management of the area was oriented not toward conservation but to helping to create a stable regional economy by bringing benefits to the local residents. This resulted in intensive management of

the bison, wolves and other species, including major culls. Commercial activities such as lumbering were also allowed. Commercial logging rights were rescinded in 1992 after a lawsuit brought by a conservation organisation (Environment Canada, 2006). However, regulations were enforced without consultation with local people which roused lasting distrust. Plains bison were moved to the Park in the 1920s, and interbred with native wood bison resulting in a hybrid stock and the introduction of bovine tuberculosis, brucellosis and anthrax. Control of these diseases was attempted in the 1960s and 1970s, and a Northern Diseased Bison Assessment Panel was set up in 1989-90. The issue was examined during a $2,775,000 research and containment program between 1995 and 1999 (Parks Canada, pers. comm., 1995). Contagion of commercial livestock is feared by cattle ranchers and the possibility of a complete cull and replacement with undiseased stock was raised in 1991 and again in 2005 by the Federal government. This was opposed by native people and the policy remains a matter of dispute. A Bison Control zone has been established around the densest marginal populations where wandering stock can be culled to prevent the spread of disease, as in the southwest corner where land clearing for livestock has attracted bison, necessitating their intensive management (Parks Canada, 2004).

The internationally important waterfowl nesting area of the Peace-Athabasca Delta is drying out over a fifth of the area, causing major food sources to disappear, allowing easier access to predators and causing ecological change. Climate change may be partly responsible. However, the lowered water level is also due to the effects of the Bennett Dam built upstream on the Peace River in 1968. The construction of two weirs between Lake Athabaska and the Peace River confluence has restored summer peak water levels in the larger lakes, but overall water fluctuations are still less than they were before regulation, and the spring ice-jam floods no longer fill the region's many perched basins. A lawsuit is ongoing between BC Hydro and local First Nations bands concerning the effect of this interference with their traditional lifestyle. Pollution of the catchment's water quality is also threatened by the construction of pulp mills upstream on the Peace, by petroleum and tar sands developments upstream on the Athabaska River, and by forestry and other land use changes in the watershed (Environment Canada, 2006). The exploitation of tar sands will remove and potentially pollute a vast amount of water feeding into the lower basin (Parks Canada, 2004). The Park is subject to land claims by native peoples: one claim on the Delta area was settled in 1985; another claim north of the 60th parallel is pending. Settlement of these claims has involved boundary adjustments, entrenchment of resource harvesting rights and the creation of advisory boards of local people (Parks Canada, pers. comm., 1995). The number of separate stakeholders with differing expectations and the complexity of issues and of government regulations have made agreement difficult. (Nepal, 2000).

STAFF

32 full-time employees including a resident superintendent and 41 seasonal employees plus 2 others: administrative, 4, visitor services, 5, conservation, 5, finance & administration, 4, fire management, 33, asset management, 6 (Parks Canada, 2004). Staff will be recruited from the local aboriginal people.

BUDGET

Total expenditure for the1994/95 fiscal year was C$838,100 for operations and maintenance, C$1,090,362 for capital development, totalling US$1,408,000 (Parks Canada, pers. comm., 1995). The annual operating budget for 2003-4 was C$7,250,000 (US$5,619,000) (Parks Canada, 2004)

LOCAL ADDRESSES

Superintendant, Wood Buffalo National Park Headquarters, Southwest New Territories Field Unit, Box 750, Fort Smith, Northwest Territories, Canada X0E, OPO

Parks Canada, Department of Canadian Heritage, 25 Eddy Street, Hull, Quebec, K1A 0M5

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DATE

1983. Updated 5-1989, 11-1989, 7-1995, 3- 2007, 8- 2010, May 2011.