WORLD HERITAGE NOMINATION

IUCN TECHNICAL REVIEW

1. IDENTIFICATION NUMBER AND NAME 151 Olympic National Park

2. LOCATION: Northwestern Washington State, 47°50'N, 124°W

3. NOMINATED BY: National Park Service, Department of the Interior, Government of the United States of America

4. DOCUMENTATION:

(i) Nomination form, including maps and photos
(ii) Supplementary documentation (IUCN)

a) Olympic National Park Master Plan

b) Consultation: Harold K. Eidsvik, Senior Policy Advisor, Parks Canada

c) Dr. Jim Thorsell, Parks Planner

d) Hutchins, M. and Stevens, M. 1981. "Olympic Mountain Goats". Natural History. January

e) An Environmental Assessment on the Management of Introduced Mountain Goats in Olympic National Park. (February 1981).

5. BACKGROUND AND SUMMARY

Olympic National Park, comprising 3628 square kilometres, is isolated from other mountain ranges and surrounded by the waters of the Pacific Ocean and Puget Sound; this isolation has allowed the development of endemic wildlife, including the Olympic marmot, 4 subspecies of the other mammals, 2 subspecies of trout, and 12 species or varieties of plants. The area contains a great wealth of geological formations, affected by high rainfall (5000 mm) on the west and low rainfall (300 mm/year) on the east. The mountains contain about 60 active glaciers; the area is unique in that it is the lowest latitude in the world in which glaciers begin at an elevation lower than 2000 metres and exist below 1000 metres. The coastal strip of the site stretches along 80 kilometres of wilderness beach, characterized by rocky headlands, log-strewn beaches, and a wealth of intertidal life; rocky islets along the coast are remnants of a continuously receding, changing coastline, and the arches, caves, and buttresses are evidence of the continuous battering of the waves. Reflecting the varied topography (from seashore to glacier) and the varied rainfall (from the wettest location in the continental US, to the driest on the northwest coast), the vegetation zones in the site are complex and varied. The Olympic rainforest, which reaches its maximum development within the site is; sitka spruce, Douglas fir, western red cedar, and others reach a living standing biomass here which may be the highest of anywhere in the world.

6. INTEGRITY

The site is large enough to contain on-going geological processes (glaciation and changing coastline) and evolution of the many and varied forest types. Ideally, the site should include the national forest which separates the 80 kilometre-long coastal strip from the montane areas, but this is not considered feasible or vital to the integrity of the site as both the coastal

strip and the 3350 square kilometres of the Olympic Mountains can stand alone. The main danger to the integrity of the site is, oddly, one of its attractions: the mountain goat. Due to the isolation of the site, mountain goats never dispersed naturally to the Olympics, so their introduction in 1925-29 may be causing significant changes in the natural ecosystem. Research has suggested that the mountain goats have reduced plant cover, increased erosion, and shifted plant-community dominants toward more resistent or less palatable species; they have been recorded feeding on at least three of the endemic plants, and some concern has been expressed that these species may be endangered by the mountain goat. A mountain goat control programme aimed at removing 180 goats and establishing and expanding a goat-free alpine zone was begun on 15 April 1981).

7. COMPARISON WITH OTHER AREAS

There is no comparable site in British Columbia or Alaska. Pacific Rim National Park in British Columbia does not yet have the extensive virgin forest; negotiations are underway, but even if successful they will not add alpine areas and glaciers to Pacific Rim. Other mountain parks such as Garibaldi (British Columbia) do not have the coastal representation. Once the northern end of Vancouver Island is passed, the forest composition changes; halfway up the British Columbia coast, the magnificent Douglas fir disappears, so the Alaskan sites are all quite different. Redwood National Park lacks the mountains and has much lower diversity of plants and geological features.

8. EVALUATION

It is apparent from the nomination form and other documentation that the Olympic National Park is the best natural area in the entire Pacific Northwest, with a spectacular coastline, scenic lakes, majestic mountains and glaciers, and magnificent temperate rainforest; these are outstanding examples of on-going evolution and superlative natural phenomena. It is unmatched in the world.

9. RECOMMENDATION

Olympic National Park meets natural criteria (ii) and (iii) and should be added to the World Heritage List. The Committee might wish to express concern about the introduced mountain goats and request a copy of the mountain goat management plan.

International Union for Conservation of Nature and Natural Resources

July 1981 (rev)

OLYMPIC NATIONAL PARK (USA)

Extending from the northwestern-most point of the contiguous United States like a small thumb from a large hand, the Olympic Peninsula is isolated by the Puget Sound from the other mountain ranges of the Pacific Northwest. This isolation has allowed the development of endemic wildlife, including the Olympic marmot, 4 subspecies of other mammals, 2 subspecies of trout, and 12 species or varieties of plants. Four species of mammal have unique fur colouration in the Olympics (black bear, snowshoe hare, short-tailed weasel, and Olympic marmot), another indication of a separate course of evolution.

The Olympic mountains were formed as a large portion of the Pacific Ocean floor collided with the North American continent and was forced under the continental plate. The lighter shales, sandstones, and basalts, which had been violently sheared and squeezed during this tectonic movement, bobbed up like a cork, forming a dome some 95 km in diameter. Deep valleys and canyons were eroded out of this dome and glaciers sculpted the craggy peaks and beautiful cirques to form the spectacular landscape which characterizes the modern Olympics.

The mountains of the 3,628 square kilometer site contain about 60 active glaciers, several existing below 1,000 meters elevation (the lowest latitude for such glaciers). The site also includes a coastal strip extending along 80 kilometers of wilderness beach, characterized by rocky headlands, log-strewn beaches, and a wealth of intertidal life; rocky islets along the coast are remnants of a continuously receding, changing coastline, and the arches, caves, and buttresses are evidence of the continuous battering of the waves. Tidepools are filled with hundreds of species of invertebrate life, and seals, sea lions, sea otters and several species of whales are often seen in the waves and around the offshore islands.

Reflecting the varied topography (from seashore to glacier) and the varied rainfall (from the wettest location in the contintental US, to the driest in the northwest), the vegetation zones contained in the site are complex and varied, providing habitats of unmatched diversity on the Pacific Coast. The coastal Olympic rainforest, comprised of Sitka spruce, Douglas fir, western red cedar, and others, is of particular interest, reaching its maximum development within Olympic National Park. It attains a living standing biomass which may be the highest of anywhere in the world; the world-record individuals of Alaska cedar, grand fir, Pacific silver fir, western hemlock Douglas fir, subalpine fir, and western red cedar are all found within the site. The coniferous forest of Olympic is of prime commercial interest and nearly all of the original forest outside the park has been harvested.

The Olympic National Park is the best natural area in the entire Pacific Northwest, with a spectacular coastline, scenic lakes, majestic mountains and glaciers, and magnificent temperate rainforest. These are outstanding examples of on-going evolution and superlative natural phenonmena.

Jeffrey A. McNeely
IUCN/CNPPA
19Feb82

U.S.A.

NAME Olympic National Park

MANAGEMENT CATEGORY II & IX (National Park and Biosphere Reserve)

World Heritage Site (Criteria: iii, iv)

BIOGEOGRAPHICAL PROVINCE 1.2.2 (Oregonian)

LEGAL PROTECTION Complete protection under Act of Congress of 29 June 1938. Fishing is permitted.

DATE ESTABLISHED 29 June 1938 as a National Park; the Pacific Coastal Area and Queets River Corridor were added 6 January 1953. Accepted as a Biosphere Reserve in June 1976, and a World Heritage Site in 1981.

GEOGRAPHICAL LOCATION In the northwestern corner of the United States bordering on Canada, on Olympic Peninsula, Washington state. 47°29'-48°11'N, 123°07'-124°42'W.

ALTITUDE Sea level to 2,428m

AREA National Park and World Heritage Site: 362,848.7ha; the Biosphere Reserve consists of 363,379ha in two units: 344,046ha including the Olympic Mountains and 19,333ha in the Pacific Coastal Area

LAND TENURE 99.6% Federal Government ownership, 0.4% privately owned

PHYSICAL FEATURES The park is divided into two segments: a mountainous core and a separate coastal strip. The rugged features of Olympic National Park are the result of the collision of drifting continental plates. When normal subduction processes, associated with continental drift, moved further westward out to sea, an upwelling of submarine sediments and volcanic material followed. A dome 95km in diameter was created consisting of contorted beds of shale, slate and sandstone with interspersed lavas. The Olympic Mountains are the highest in this coastal range bounding the Pacific ocean, and are the central topographic feature of the park. The action of 11 major rivers and many glaciers (60 of which remain) has carved the dome into a vast array of deep canyons and jagged peaks. Ancient 1,000m thick continental ice sheets transported non-native granite up to 200km from British Columbia, Canada. 4,300 ha of ice, luxuriant rain forests with 100m tall trees, and 90km of rugged wave-battered coastline combine to create a park of great physical and biological diversity. Climate is moderate and temperatures rarely drop below -7°C or rise above 27°C. Mean annual temperatures are 10°C at lower elevations with a yearly range from 1°C to 17°C. Storms account for 4,000mm of precipitation annually in western rain forest valleys and 5,000mm on Mount Olympus; only 53km to the northeast precipitation falls to 300mm, creating the greatest precipitation gradient per distance in the world at a temperate latitude.

VEGETATION The five major vegetation zones are:

1) Sitka spruce zone (36,284ha, 10%), containing temperate rain forest and characterized by Sitka spruce Picea sitchensis, western hemlock Tsuga heterophylla, western red cedar Thuja plicata, and bigleaf maple Acer macrophyllum along the coast and in valley bottoms.

2) Lowland forest zone (36,284ha, 10%), characterized by western hemlock Tsuga heterophylla, western red cedar Thuja plicata, grand fir Abies grandis and Douglas fir Pseudotsuga menziesii, an extensive fire sub-climax species upto 550m elevation.

3) Montane zone (181,425ha, 50%), characterized by western hemlock Tsuga heterophylla in lower and drier habitats, Pacific silver fir Abies amabilis in higher and more moist habitats and Douglas fir Pseudotsuga menziesii as an extensive sub-climax in eastern portions of the park (generally from 550-1,100m).

4) Subalpine zone (72,570ha, 20%), characterized by mountain hemlock Tsuga mertensiana in the western portion of the park and subalpine fir Abies lasiocarpa in the eastern portion, including extensive park-like meadows (generally from 1,100m to around 1,600m).

5) Alpine/glaciers region (36,284ha, 10%), characterized by red mountain heather Phyllodoce empetriformis, tall sedge Carex spectabilis, spreading phlox Phlox diffusa and large tracts of snow and ice (highest ridge and mountain tops).

The park contains 500 taxa of vascular plants, of which at least 13 are endemic. The endemic Olympic flora includes six species; Cotton's milk-vetch Astraglaus cottonii, Piper's bellflower Campanula piperi, Olympic mountain daisy Erigeron flettii, rockmat Petrophytum hendersonii, Olympic butterweed Senecio neowebsteri and Flett's violet Viola flettii; and seven varieties: Piper's bellflower white form Campanula piperi v. soveregniana, magenta paintbrush Castilleja parviflora v. olympica, wallflower Erysimum arenicola v. arenicola, white coiled-beak lousewort Pedicularis bracteosa v. astrosanguinea, kittentails Synthris pinnatifida v. lanuginosa and Olympic rockcress Arabis furcata v. olympica.

NOTEWORTHY FAUNA 180 species of birds and 50 species of mammals, with at least 7 endemic taxa. The native fauna is intact except for the local subspecies of wolf Canis lupus nubilus, which was extirpated by man before the park was established. The large coastal subspecies of elk Cervus elaphus roosevelti was first described in the Olympic Mountains and its protection was an important reason for establishing the park, with an estimated 3000-5000 animals in the area. The Rocky Mountain goat Oreamnos americanus was introduced by man before the park was created and is now fully established with an estimated population of 500-1000. The endemic Olympic fauna includes three species: Olympic marmot Marmota olympus, Beardslee trout Salmo gairdneri beardsleei and Crescenti trout Salmo clarkii crescentis, and four subspecies: olympicus: Olympic mole Scapanus townsendi, short-tailed weasel Mustela erminea, Olympic chipmunk Eutamias amoenus subsp. caurinus and Olympic mazama pocket gopher Thomomys mazama subsp. melanopes. Other noteworthy species are cougar Felis concolor, coyote Canus latrans, mule deer Odocoileus hemionus ssp columbianus, fisher Martes pennanti, snowshoe hare Lepus americanus subsp. washingtonii, cougar Felis concolor, peregrine falcon Falco peregrinus (V) and spotted owl Strix occidentalis. Over 50 species of smaller animals have been identified. Nearly 1,000km of streams and rivers in the park are inhabited by some 20 native fish species, including 7 species of salmon and trout that migrate to and from the ocean.

CULTURAL HERITAGE A few abandoned homestead clearings (0.5 to 5ha) are evident in certain lowland valleys, and several are designated as historical sites.

POPULATION Towns on the peninsula are small (Port Angeles has 16,500 inhabitants) but less than 80km to the east the Seattle-Tacona urban complex has a population of nearly 2 million.

ZONING 96% of the park is managed as a wilderness area and 4%, including all public facilities, is managed as a natural area.

CONSERVATION MANAGEMENT There are various management plans for the area. In April 1981 a goat control programme began, aimed at removing 180 goats and expanding a goat-free alpine zone.

DISTURBANCES OR DEFICIENCIES The core of the Olympic Mountains is still largely undisturbed mountain and forest. No timber harvesting is permitted in the park but there is some illegal felling, rapidly increasing around the boundaries. Introduced mountain goats Oreamnos americanus have had an impact on high elevation communities. 0.4% of the park, which is privately owned, is visually obtrusive. A proposed oil superport and related refineries to be located in Port Angeles harbour, 4.6km from the park could have an adverse effect on the park. Water quality in coastal areas is also threatened by large-scale applications of herbicides in timber-producing areas adjacent to the park. Tourists and other visitors have an adverse effect on the park.

TOURISM Over 2.5 million people visit the park annually but most stay near 267km of the road that enters the mountain valleys peripherally and skirts about 25% of the Pacific Ocean coastline. 1,000km of trails interconnect the mountainous interior for foot and horse passage. There are at least 125,000 overnight hikers each year, many along the ocean coastline. 9 ranger stations and 9 seasonal tourist facilities are located around the periphery of the park.

SCIENTIFIC RESEARCH Since 1971 management studies by the park staff have extensively investigated human recreational impact and its mitigation in back-country camping areas. Other management problems needing research attention include baseline surveys of all major biotic subsystems, terrestrial and aquatic, as benchmarks for sound management strategy, the ecological role and appropriate management of wildfire, population ecology and protection of Cervus elephus roosevelti and its role as consumer in forest communities; status and protective measures needed for native genetic stocks of anadromous fish species; and status and protection of alpine plant endemics with increasing recreational use. Distinctive plant communities have been described by Fonda and Bliss 1969, Kuramoto and Bliss 1970, and Fonda 1974. Research has suggested that the goats have reduced plant cover, increased erosion and shifted plant community dominants toward more resistant or less palatable species, and they have been recorded feeding on at least three of the endemic plant species.

SPECIAL SCIENTIFIC FACILITIES 5,000-specimen study collection and reference library

PRINCIPAL REFERENCE MATERIAL Numerous publications are available in the park library, Pioneer Memorial Visitor Centre, Port Angeles.

Fonda, R.W. and Bliss, L.C. (1969). Forest vegetation of the montane and subalpine zones, Olympic Mountains, Washington. Ecological monographs 39: 271-301.

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Biosphere Reserve nomination submitted to Unesco.

STAFF 78 permanent, 28 permanent part-time and 107 seasonal employees

BUDGET US$3,400,000 in 1980

LOCAL PARK OR RESERVE ADMINISTRATION Superintendent, Olympic National Park, 600 E. Park Avenue, Port Angeles, Washington 98362

DATE August 1982

UNITED STATES OF AMERICA-Olympic National Park

UNITED STATES OF AMERICA - Washington

NAME Olympic National Park

MANAGEMENT CATEGORY II (National Park)
IX (Biosphere Reserve)
X (World Heritage Site - Criteria: iii, iv)

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CULTURAL HERITAGE A few abandoned homestead clearings (0.5 to 5ha) are evident in certain lowland valleys, and several are designated as historical sites.

LOCAL HUMAN POPULATION Towns on the peninsula are small (Port Angeles has 16,500 inhabitants) but less than 80km to the east the Seattle-Tacona urban complex has a population of nearly two million.

VISITORS AND VISITOR FACILITIES Nine ranger stations and nine seasonal tourist facilities are located around the periphery of the park.

SCIENTIFIC RESEARCH AND FACILITIES Since 1971 management studies by the park staff have extensively investigated human recreational impact and its mitigation in back-country camping areas. Other management problems needing research attention include baseline surveys of all major biotic subsystems, terrestrial and aquatic, as benchmarks for sound management strategy; the
ecological role and appropriate management of wildfire, population ecology and protection of Cervus elaphus roosevelti and its role as consumer in forest communities; status and protective measures needed for native genetic stocks of anadromous fish species; and status and protection of alpine plant endemics with increasing recreational use. Distinctive plant communities have been described by Fonda and Bliss 1969, Kuramoto and Bliss 1970, and Fonda 1974. Research has suggested that the goats have reduced plant cover, increased erosion and shifted plant community dominants toward more resistant or less palatable species, and they have been recorded feeding on at least three of the endemic plant species. There is a 5,000-specimen study collection and reference library.

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MANAGEMENT PROBLEMS The core of the Olympic Mountains is still largely undisturbed mountain and forest. No timber harvesting is permitted in the park but there is some illegal felling, rapidly increasing around the boundaries. Introduced mountain goats Oreamnos americanus have had an impact on high elevation communities. 0.4% of the park, which is privately owned, is visually obtrusive. A proposed oil superport and related refineries to be located in Port Angeles harbour, 4.6km from the park could have an adverse effect on the park. Water quality in coastal areas is also threatened by large-scale applications of herbicides in timber-producing areas adjacent to the park. No timber harvesting occurs in the park but is rapidly increasing around its boundaries. Tourists and other visitors have an adverse effect on the park. Over 2.5 million people visit the park

annually but most stay near 267km of the road that enters the mountain valleys peripherally and skirts about 25% of the Pacific Ocean coastline. 1,000km of trails interconnect the mountainous interior for foot and horse passage. There are at least 125,000 overnight hikers each year, many along the ocean coastline.

STAFF Seventy-eight permanent, 28 permanent part-time and 107 seasonal employees

BUDGET US$3,400,000 in 1980

LOCAL ADMINISTRATION Superintendent, Olympic National Park, 600 E. Park Avenue, Port Angeles, Washington 98362

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Tabor, R.W. (1975). Guide to the geology of Olympic National Park. University of Washington Press, Seattle.

DATE August 1982, revised August 1986
0070U

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PATRIMOINE MONDIAL: CANDIDATURE

EXAMEN TECHNIQUE PAR L'UICN

1. NUMERO D'IDENTIFICATION ET NOM: 151 Parc national "Olympic"

2. SITUATION GEOGRAPHIQUE: Au nord-ouest de l'Etat de Washington, 47°50'N, 124°0

3. CANDIDATURE PROPOSEE PAR: Service des parcs nationaux, Département de l'Intérieur, gouvernement des Etats-Unis d'Amérique

4. DOCUMENTATION:

(i) Formulaire de candidature avec cartes et photos
(ii) Documentation complémentaire (UICN)

a) Le plan directeur du parc national "Olympic".

b) Consultation de Harold K. Eidsvik, conseiller auprès de Parks Canada

c) M. Jim Thorsell, planificateur de parcs

d) Hutchins, M. et Stevens, M. 1981. "Olympic Mountain Goats". Natural History. Janvier.

e) Evaluation environnementale sur la gestion des chèvres de montagne introduites dans le parc national Olympic (février 1981).

5. PRESENTATION RESUMEE

Le parc national Olympic, d'une superficie de 3628 km^2, est isolé des autres chaines de montagnes par les eaux du Pacifique et Puget Sound. Cet isolement a permis l'évolution d'une faune endémique, notamment de la marmotte d'Olympic, de quatre sous-espèces d'autres mammifères, deux sous-espèces de truites, et de 12 espèces ou variétés de plantes. Dans cette région se trouve une grande richesse de formations géologiques, affectées par des précipitations élevées (5000 mm) à l'ouest, et faibles (300 mm) à l'est. Les montagnes comportent environ 60 glaciers actifs. La région est unique en ce qu'elle est située à la latitude la plus basse qui soit à laquelle les glaciers commencent à une altitude inférieure à 2000 m et se maintiennent encore au dessous de 1000 m. La frange côtière du site s'étend sur 80 km de plages caractérisées par des avancées rocheuses, un rivage parsemé de bois mort et riche en vie intertidale. Les ilots rocailleux le long de la côte sont des vestiges d'une côte changeante, en recul continuel, et les arches, cavernes et anfractuosités rocheuses, sont autant de témoignages, des coups de boutoir des vagues. Les zones de végétation du site sont complexes et variées, et reflètent la diversité du relief (des plages aux glaciers) et des précipitations (de la zone continentale américaine la plus humide à la plus sèche, sur la côte nord-ouest). Présentant un remarquable intérêt, la forêt humide d'Olympic atteint son développement maximal sur ce site, où l'épicéa sitka, le sapin de Douglas, cèdre rouge occidental (Thuja plicata), et d'autres espèces constituent la plus biomasse vivante permanente la plus considérable qui soit.

6. INTEGRITE

Ce site est suffisamment vaste pour contenir les processus géologiques actuels (formation de glacier) et modification du tracé de la côte) et évolution des nombreux types de forêts. L'idéal serait que le site inclut la forêt nationale qui sépare la frange côtière de 80 km de long des régions montagneuses, mais cela n'est pas jugé faisable, ni indispensable à l'intégrité du site, car aussi bien la zone côtière que les 3350 km^2 des montagnes Olympic peuvent subsister l'un sans l'autre. Le principal danger que court l'intégrité du site est, paradoxalement, l'une de ses principales attractions: la chèvre de montagne. Etant donné l'isolement du site, les chèvres de montagne n'étaient jamais allées d'elles-mêmes vers les monts Olympic, de sorte que leur introduction en 1925-29 a peut-être provoqué des changements importants dans l'écosystème naturel. Des études donnent à penser que les chèvres de montagne ont réduit la couverture végétale, accroissant l'érosion et modifiant la communauté végétale - les espèces dominant faisant place à d'autres plus résistantes ou qui ont moins de goût; les chèvres se nourrissent d'au moins trois espèces endémiques, et certains auteurs craignent que ces espèces soient menacées par la chèvre de montagne. Un programme de limitation de la chèvre de montagne vise à enlever 180 chèvres et étendre la zone alpine dépourvue de chèvres établie le 15 avril 1981.

7. COMPARAISON AVEC D'AUTRES REGIONS

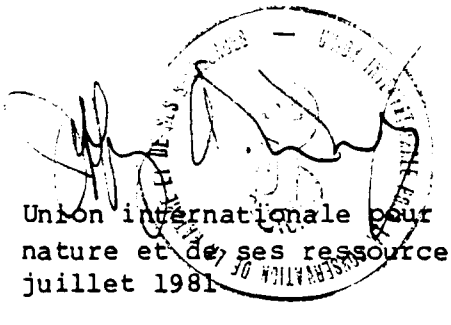
Nul autre site n'est comparable en Colombie britannique ou en Alaska. Le parc national du Bord du Pacifique, en Colombie britannique, ne couvre pas encore largement la forêt vierge. Des négociations sont en cours, mais même si elles aboutissaient, elles n'incluraient pas de régions alpines, ni de glaciers à ce parc national. D'autres parcs nationaux comme celui de Garibaldi (Colombie britannique) ne comportent pas de zones côtières. A partir de l'extrémité septentrionale de l'île de Vancouver, la composition de la forêt change. A mi-chemin de la côte de la Colombie britannique, le magnifique sapin de Douglas disparait, les sites de l'Alaska deviennent tous très différents. Le parc national de Redwood n'a pas de montagnes, et sa diversité en plantes et en traits géologiques est bien moindre.

8. EVALUATION

Il ressort du formulaire de candidature et d'autres documents que le parc national Olympic est la meilleure région naturelle de tout de nord-ouest du Pacifique, avec son rivage spectaculaire, le panarama qu'offrent ses lacs, ses glaciers et ses montagnes majestueuses, et sa magnifique forêt humide. Ce sont là des exemples remarquables de phénomènes naturels et de l'évolution. Ce parc n'a pas son pareil au monde.

9. RECOMMANDATION

Le parc national Olympic répond aux critères (ii) et (iii) et devrait être ajouté à la liste du patrimoine mondial. Le comité pourrait se préoccuper des chèvres de montagne qui y ont été introduites, et demander un exemplaire du plan de gestion de la chèvre de montagne.



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