BROKEN GROUP ISLANDS

RESOURCE MANAGEMENT PLAN

PACIFIC RIM NATIONAL PARK

1987

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RECORD OF ANNUAL REVISIONS

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REVIEW LOG

RECORD OF ANNUAL ACCOMPLISHMENT

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1.0 INTRODUCTION

The Barkley Sound is on the west coast of Vancouver Island. The northwest entrance to this sound is bounded by Loudoun Channel and the southeast by Imperial Eagle Channel. Between these channels and exposed to the open Pacific Ocean lies an archipelago of some ninety-five islands and islets known as the Broken Group Islands. Their boundary description is:

> "Commencing at centre of "Sail Rock" being a small islet west of Benson Island, Lot 43, Barclay District: thence north 1.7 miles: thence N 38° E 5.0 miles: thence S 64° 30' E 5.8 miles: thence S 37° W 7.7 miles; thence N 64° W 4.1 miles more or less to a point due south of the aforesaid centre of Sail Rock; thence northerly 1.2 miles more or less to the said centre of Sail Rock, being the point of commencement."

Preliminary research prompted former Minister of Recreation and Conservation, Mr. K.W. Kiernan, to establish a joint Federal and Provincial survey to examine the potential national park areas on the west coast of Vancouver Island. The survey was conducted in May of 1967 and revised by a Guidance Committee in Planning, July 18, 1967. A formal agreement between the Government of Canada and the Government of British Columbia, was signed on April 20, 1970. This established the boundaries for Long Beach and the Broken Group Islands units and a schedule for land acquisition. With the exception of four parcels of Indian Reserve, totalling approximately fifty hectares, the Broken Group Islands are now federal crown land holdings.

The document entitled, A National Park Proposal, Parks Canada 1967, proposed the following management theme for the Broken Group Islands:

> "The major consideration is the opportunity to preserve in an undisturbed state the flora, fauna and sea life associated with a small group of offshore islands. After careful study, some of the islands would be designated and developed for visitor use whereas the major portion would be preserved as a nature sanctuary." (Parks Canada, 1967)

With this established management direction, Park's Planning Division, Western Region, developed the document called "Pacific

Rim National Park, Broken Group Islands Unit, Management Planning, 1978". In 1980, the Broken Group Islands Unit Management Plan, was approved and signed by the Director General of the Western Region.

The Resource Management Objectives of this plan (Parks Canada, 1980) are as follows:

a) To preserve in an undisturbed state, the natural features and processes occurring in the unit.

b) To manage the natural features and processes only where such management is necessary to compensate for man-induced effects.

c) To provide a high quality wilderness experience to all users by limiting development to primitive facilities on a few islands.

The Park Warden Service of the Resource Conservation Section has been active in the unit since 1973. At that time the unit was described as remote and visited by few, except local residents. Today the unit hosts thousands of visitors annually. Commercial boat tours, water taxi services, kayak expedition companies, SCUBA diving and sport fishing charters bring visitors over and above those that travel privately to the unit. It is apparent that contemporary conditions differ greatly from those originally described in the 1980 unit plan. Subscribing to the management objectives of the 1980 unit plan, while considering the current situation in the unit and recognizing the importance of prudent dollar/person-year expenditures, this resource managment plan proposes the following:

a) to describe the contemporary situation in the unit:
b) to describe the problems that exist;
c) to offer solution options for these problems, and....
d) to detail the preferred options, along with providing funding and person years for their implementation.

2.0 BACKGROUND INFORMATION

2.1 Introduction

The Broken Group Islands, at the entrance of Barkley Sound, consist of a compact group of ninety-five small islands and islets (Figures 1, 2, & 3). The islands face the open Pacific ocean. Their shorelines are for the most part rocky being interspersed with small beaches. The area is scenically attractive and possesses a variety of marine and terrestrial habitats. The sheltered waters in the narrow channels and in the lee of the larger islands, permit leisurely and comparatively safe enjoyment of the surroundings (Seel, 1982).

2.2 Historical Perspective

Archaeological research indicates Paleolithic man's presence on the Pacific Coast around 9000 B.C. From where these people originated and their connection with the present inhabitants is unknown. Eventually the native people became differentiated by physical type, culture or language. The Broken Group Islands were the domain of a people known as the Nuu-Chah-Nulth, of Nootka stock.

Prior to European contact the Nuu-Chah-Nulth intermittently occupied numerous village sites, as they followed seasonal food sources. After contact with the Europeans, i.e. Vitas Bering 1741, and Juan Joseph Perez Hernandez, 1774, the decline of the native culture and society began. The traditional Nuu-Chah-Nulth lifestyle was further altered as the British, Spanish and Americans established forts along the West Coast. Two major skirmishes at the turn of the eighteenth century caused the European traders to avoid the West Coast. The Nuu-Chah-Nulth then briefly returned to a traditional lifestyle.

Fort Victoria was established in 1843. It became a British naval base and a trade centre for the Nootka Indians who bartered sealskin and dogfish oil. With the importation of European trade

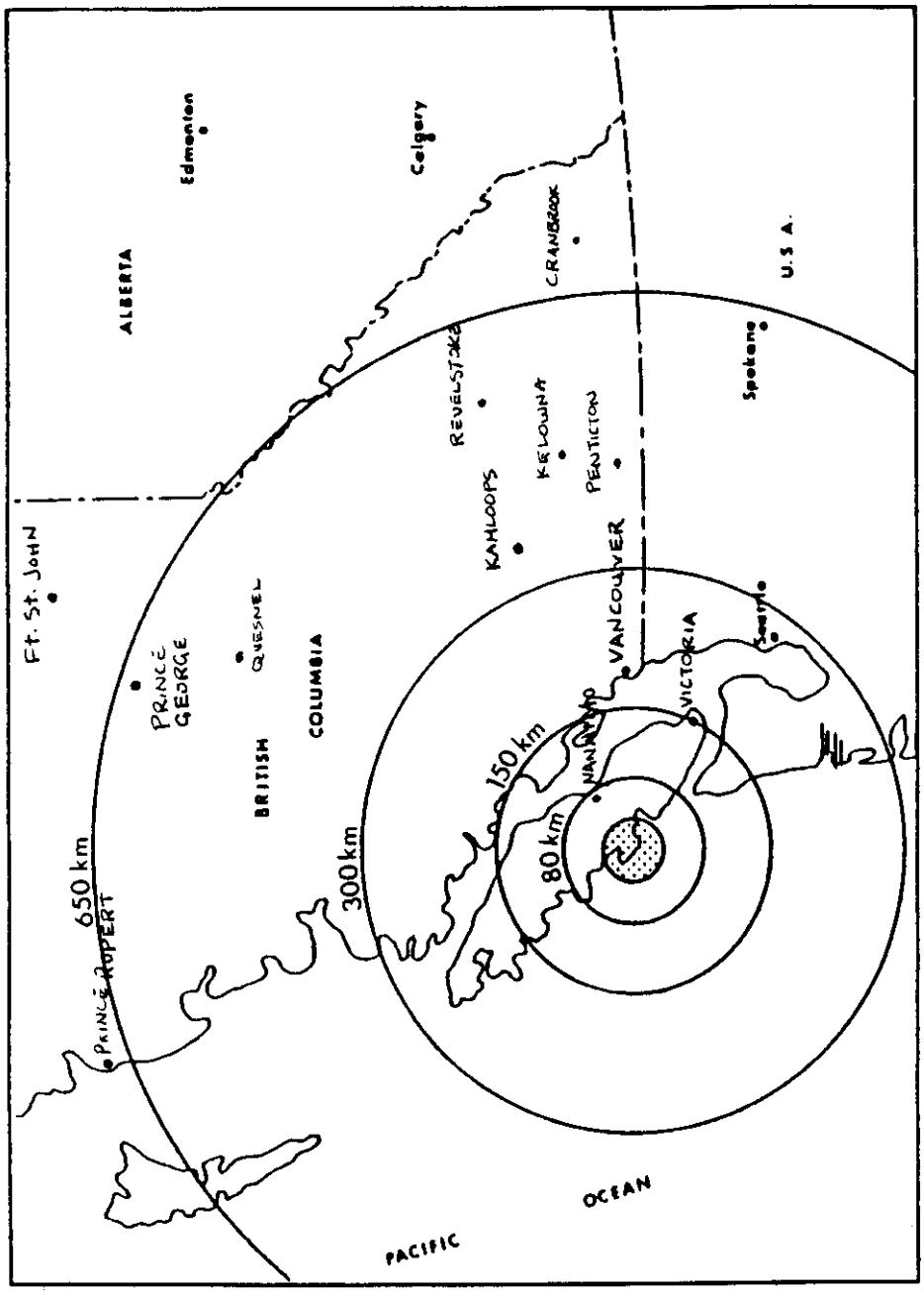

Figure 1. The regional perspective of Pacific Rim National Park

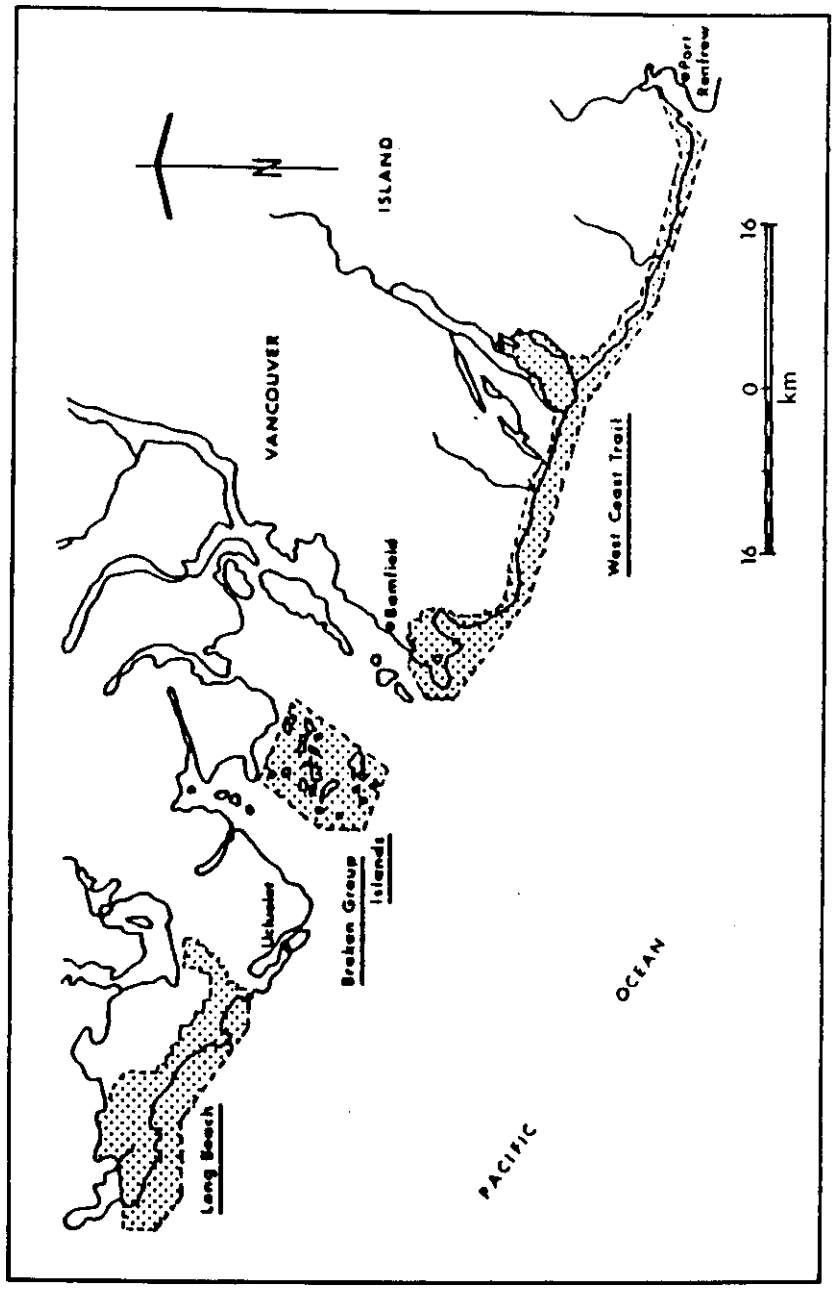

Figure 2. The three segments of Pacific Rim National Park

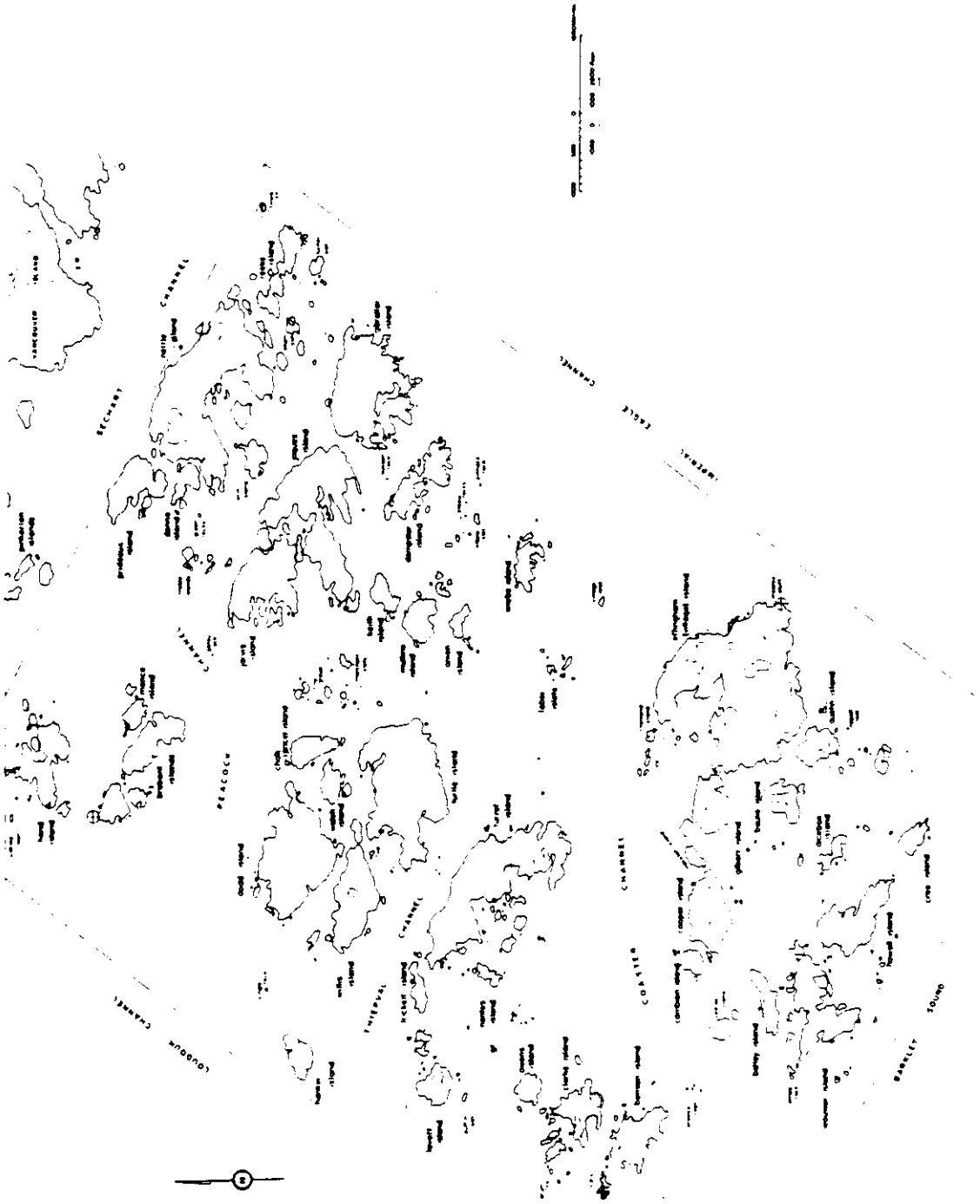

Figure 3. The Broken Group **Islands** of Pacific Rim National Park

goods and diseases and because of the control exerted by the British navy, the Nuu-Chah-Nulth nation began to fragment. The introduction of Christianity in 1874 assured the ultimate demise of the original Nuu-Chah-Nulth culture.

Certain physical remnants of the traditional Nuu-Chan-Nulth culture remain in the unit today. Seasonal village sites, midden sites, fishtraps, and burial caves are still recognizable.

Since the beginnning of the twentieth century the islands have served as a backdrop for commercial fishermen, commercial marine traffic, and an increasing boating public. The islands have also hosted mining ventures, logging, reclusive hermits, and recreationists. In April of 1970, the Broken Group Islands were signed over to the Government of Canada by the Government of British Columbia.

2.3 BIOGEOGRAPHICAL DESCRIPTIONS

2.3.1 Hydrological

2.3.1.1 Marine

The islands are exposed to the open Pacific Ocean. Here, two currents, the North Pacific and the Sub-Artic Current, mix and merge offshore with other sub-currents. In turn, these currents are affected by the prevailing winds. The result is an offshore current that flows northwesterly.

The combined effects of wind and current result in ocean temperatures that range from 7°C in the winter, to 14°C in the summer. Sea-fogs are experienced in the islands from June until October. These result from continuous onshore winds that cause an upwelling of cool water that comes in contact with the warmer air of the near-shore summer atmosphere.

2.3.1.2 Fresh Water

Streams are scarce on the islands. Only Effingham Lake, after its island namesake, is drained by a small unnamed stream. Drinking water is limited in quantity and marginal in quality during the period of high visitor use.

2.3.2 Climatic

The climatic regime affecting this unit is determined by the interactions of the Pacific airstreams and topographical features of the continent. Also, an onshore flow of cyclonic systems out of the northern Pacific Ocean imposes repetitive seasonal weather patterns on this unit (Klein, 1957).
Climatic Data:

Seasons:	Mean Temperatures:	Wind Direction:	Preciptation:
Summer	17°C	Northwest	23 cm
Winter	5°C to 0°C	Southeast, East	153 cm
Spring/Fall	14°C	Southeast	82 cm

The West coast of Vancouver Island is subjected to severe storms characterized by heavy winds, intense rainfall, and huge ocean waves. In contrast, the moderate annual temperatures (up to 250 frost free days) contribute to a lush and productive vegetation regime (Scoggan, 1978).

2.3.3 Geologic Land Forms

The western edge of North America is geologically complex and unstable. Vancouver Island is described as "a component of the Insular Fold Belt and is recognized as the most westerly major tectonic subdivision of the Canadian Cordillera . . .The Broken Group Islands are essentially underlain by formations of the West Coast crystalline Complex" (Seel, 1982).

The Unit lies in an active earthquake and volcanic zone.

2.3.3.1 Land Forms

The unit represents an erosionally modified collection of glacial landforms. These landforms are now subjected to mass wastage and shoreline and sheet erosion, because of the inherent weakness of the till deposits which are situated on rain saturated slopes (Seel, 1982).

2.3.3.2 Soils

The Soil Climate Classification for North America (FAO/UNESCO) has recognized two categories of environmental soil temperature regimes, which are found in Pacific Rim National Park. These are the moderately Cold and Humid Cryoboreal and the Semi-Arid Boreal, both of which are affected by a maritime influence and characterized by an extended growing season. The environmental soil moisture regimes within the park lands are Perhumid. Soils that developed on till are the most common group found in the unit and they consist of: Lithic Humo-Ferric Podzols, Ortho Humo-Ferric Podzols; Gleyed Humo-Ferric Podzols and Placic Humic Podzols (Seel, 1982).

Soil productivity in the unit is restricted, and this implies higher impact sensitivity with respect to facility locationing and limited regeneration potential (Seel, 1982).

2.3.4 Vegetation

Moderate temperatures, heavy rainfalls and the moderating heat reservoirs of the Kuroshio-North Pacific Current encourage the lush vegetation of the West Coast forest. Mild temperatures and the Coast Mountains serve to separate the West Coast from most of the influence of the Continental air masses. These factors have contributed to the development of species of flora and fauna unique to the coastal environment.

The following species are restricted to the West Coast forest:

- Sitka spruce
- amabilis fir
- yellow cedar
- red alder
- Garry oak
- broadleaf maple
- vine maple
- western flowering dogwood
- arbutus

Douglas fir, Sitka spruce, western hemlock and western red cedar are the most predominant species.

Following Krajina's (1959) division of vegetation, Pacific Rim National Park lies within the Coastal Western Hemlock Zone of the Pacific Mesothermal Forest Region, within the Mesothermal Biogeoclimatic Formation (Seel, 1982).

This zone is characterized by: temperatures of 10°C for five to six months a year, and seldom below 0°C; 186 to 344 frost free days a year; 1550 mm to 4400 mm of annual precipitation (0.7% to 15% of which falls as snow).

Within the unit, 231 vascular plant species have been identified. They comprise 168 genera and 61 families. Of these only 26 species are abundant and widespread (Seel, 1982). A knowledge gap exists with respect to non-vascular plant species.

2.3.5 Wildlife (General)

The wildlife species in the unit have been establishing themselves since the end of the last glacial incursion. The marine mammal, amphibian, reptile and avifaunal surveys referred to below, are by no means definitive.

2.3.5.1 Terrestrial Mammals

Hatler (1972) indicates that there are a restricted number of native terrestrial species in the unit, in comparison to other areas in B.C. of similar size. The Broken Group Islands support ten (10) species, Vancouver Island supports eighteen (18) species

and British Columbia's Coastal Mainland supports forty-eight (48) species.

2.3.5.2 Marine Mammals

Twelve (12) species of marine mammals have been observed in the unit (Seel, 1982).

2.3.5.3. Amphibians and Reptiles

Seven species of each have been found in the unit (Carl, 1966).

2.3.5.4 Avifauna

Hatler, Campbell & Dorst (1973) recorded forty-five (45) bird species along three separate transects within the unit.

The noteworthy wildlife issues include the monitoring and protection of pelagic bird colonies, eagle and peregrine falcon nesting sites, sea lion rookeries and haul-out sites, and the activities of marine mammal watchers.

2.4 INDIAN RESERVES

There are four Indian Reserves in the unit. They are presently uninhabited and undeveloped, with the exception of a small cabin and dock On IR#6 Cheho. Given the appeal of the area, future establishment of residences, lodges, and recreational facilities, seems likely.

Reserve Number:	Location:	Area in Hectares:
IR#8 Keith Island	Keith Island (Sheshaht)	6.88
IR#7 OMAOH	Effingham Island(Sheshaht	12.14
IR#6 CLEHO	Nettle Island (Sheshaht)	5.26
IR#9 Nettle Island	Nettle Island (Apetchesaht)	21.65

2.5 FACILITIES AND SERVICES

2.5.1 Campgrounds

There are seven primitive campgrounds in the unit. While they are distributed throughout the area, those receiving the greatest use are on Hand-, Willis-, and Turret Islands. Those campgrounds on Benson-, Clarke-, and Gilbert Islands, are somewhat separate because of the expanse of Coaster Channel. Though the Motor Vessel (M.V.) Lady Rose docks at the Gibralter Island campground, visitors seem anxious to disperse from this site.

While there are a number of points of entry to the unit, it has been observed by the park's Warden Service that, eighty (80) percent of the campers arrive via the M.V. Lady Rose, or by boat (power, canoe and kayak) from Toquart Bay. Those accessing the unit from Toquart Bay generally make Hand Island their first destination. Visitors debark from the M.V. Lady Rose at Gibralter Island. Therefore, eighty (80) percent of the users could be reached via signing at these two areas. The campgrounds are utilized most heavily by canoers and kayakers and less frequently by sail and power boaters.

All of the campgrounds offer pit privies, directions to water sources, and limited supplies of drinking water of dubious

quality. Tenting is on the beaches or forest understorey, while fires are allowed below the high tide line.

Resource impairment at the campgrounds appears to be minimal. This may be explained by the limited period of use (fourteen (14) weeks per year), the opportunity for vegetation (optimal climatic conditions and minimal use over thirty eight (38) weeks a year), public direction offered through park publications, daily Park Warden patrols, and "hard" site conditions, that include tidal sand beaches. Some site damage is resulting from campfires being built on forest duff. Turret-, and Gibralter Island campgrounds are the worst for wet. Site-specific information with respect to areas of archaeological resources of significance within the several campground needs yet to be obtained.

Overcrowding in the campgrounds occurs during the summer visitor peak in late July and early August. This condition is often exacerbated by commercial kayak expedition companies that will suddenly introduce large groups onto already crowded camp-grounds. When social capacities are stressed, user conflict and illegal camping seem the result.

2.5.1.1 Privies

There are pit privies located at each campground in the unit. They are all of cedar batten board construction and all are in need of structural inspection. There are certain management problems associated with some of these facilities. The single privies on the larger, more crowded campsites, are often not used. Utilization of the perimeter areas of the campground, rather than the privy facilities presents a potential health hazard, offensive site conditions, and the possible displacement of some resident mammal species. Some of the toilet pits have exceeded their capacity and these facilities require immediate relocating. Recloation of some privies is an annual maintenance requirement.

Additional privies at the large and crowded Benson-, Hand-, Willis-, and Turret Island campgrounds are recommended.

Re-establishment of the Willis-, and Turret Island privies are necessary as these pits also have reached their capacity.

2.5.1.2 Drinking Water

Inadequate supplies of quality drinking water are endemic to the unit. Water quality tests conducted by the Provincial Health Department on July 20, 1983, indicated unsatisfactory fecal coliform counts at all drinking water supplies within the unit, with the exception of the Park Warden's supply (see Appendix #1). Boiling of all drinking water is recommended.

With the exception of Turret Island, no water collection and holding facilities or contraptions are in place. There is a small wooden dam and sluice at Turret Island which maintains the water flow, yet allows for the collection of water without any disturbance of the silt accumulated there.

2.5.1.3 Trails and Signs

The trail facilities found at each island are limited and most exist to access drinking water sources. Boardwalk and bridges are without exception rotted and failing. Inadequate or non-existent trail markers render some routes very difficult to follow.

The boardwalk and bridges on Clarke Island are in a seriously delapidated condition. There is a large ramp en-route to the water supply that is structurally failing, as is the small bridge that crosses the cemented canal at the water gathering site.

Most of the campground water supplies are rather remote from the camp sites. Many of the trails to them are obsured, or the routes branch without the proper direction posted.

There are no distinctive markers, visible from the water sources, to indicate the return routes to the campground locations.

2.5.1.4 Floating Docks

a) Clarke Island Float

Until the winter of 1985, a float was located at Clarke Island (UTM Coordinates CK 25.9, 18.0). At some time during the winter of 1985 this float broke lose from its anchors. What appeared to be the Clarke Float, was discovered in the Pinkerton Islands in October 1986 (UTM Coordinates CK 32.2, 25.7). It was found partially dismantled with damage to the rails and deck. Blocks of the Styrofoam floatation system were sitting on top. This float is believed to be at the Pinkerton location at this time. A search at the original float site in August of 1986 located only one of the two anchors.

b) Gibralter Island Floats

There are two wooden floats located at the Gibralter Island campsite (UTM Coordinates CK 34.7, 20.6). The larger float serves the M.V. Lady Rose for docking and debarking. This float shifted from its moorings during the winter of 1985-86. It is presently tied to the Park Warden float at Nettle Island awaiting a new anchor chain and relocation to the Gibralter site. The smaller float also requires replacement of it's anchor chain. In November of 1986, the Park Superintendent acquired gratis anchor chains from the Bamfield Coast Guard Station for all the floats in the unit.

c) Park Warden Float

The Sitka Cabin used by Park Wardens rests upon a wooden float and dock. A small storage shed is attached to it by a smaller float. The larger float is structurally sound, however, it is anticipated that its anchor chains are in need of replacement. The smaller float requires installation of additional floatation materials.

2.5.2 Cabins

2.5.2.1 Sitka Cabin

Sitka cabin is a one-bedroom "Panabode" building situated on a float in a bay on Nettle Island (UTM Coordinates CK 35.2, 21.8). Cooking, heating and refrigeration is achieved with propane. Toilet facilities are privy style, and are situated on a small island adjacent to the cabin (see Appendix #1 for the equipment inventory).

The cabin is inhabited by a Seasonal Park Warden, from approximately June 1 to September 15 each year. The cabin serves as a residence, public information centre, and base of operations. The Park Warden receives many daily visitors, and usually offers them refreshments, while responding to their enquiries. He is required to vacate his residence every ten days for four days, to a relief Warden.

The structural soundness of the cabin is adequate. The park's Warden Service conducts minor maintenance duties, such as the painting of the exterior which was done in the summer of 1986. Major repairs are carried out by the park's General Works personnel who in the summer of 1986 replaced the roof shingles.

Posted on an exterior wall of the cabin is a large park interpretive sign and map presenting public safety and natural history information to visitors. Daily fesh water supply and ocean tide bulletins, general messages, and information about paralytic shell-fish poisoning closures, are posted in the same vicinity.

2.5.2.2 Jacques Cabin

Jacques Island cabin is a single storey log cabin (UTM Coordinates CK 33.9, 20.4). The cabin is stocked with primitive furniture, a kitchen counter, and an old wood stove. The stove pipe and chimney are delapidated, the pipe has been patched with aluminum foil. The soundness of the structure, e.g. log walls,

footings, rafters, roof, etc. is unknown. While the cabin attracts many campers this is not an approved campsite.

2.5.2.3 Nettle Cabin

There is a small wood frame cabin located on Nettle Is and at Cleho IR#6 Indian Reserve (UTM Coordinates CK 35.8, 21.7 . The physical status of the structure is unknown at this time. Use of the cabin is at present believed to be infrequent. It should be noted that this is not a park cabin.

2.5.2.4 Clarke Cabin

The Clarke Island cabin is a single storey frame structure with several adjoining rooms to the rear (UTM Coordinates CK 25.8, 18.0). Some rudamentary furniture, a wood stove and a rock fireplace make up the furnishings. A wooden deck surrounds three sides of the cabin.

The stovepipe and chimney are temporarily repaired with aluminum foil. The deck has rotted and failed timbers and planks are in evidence. The soundness of the structure, e.g. the foundation, roof, chimney and fireplace are unknown, but suspect.

The use of the cabin causes accumulations of garbage, especially bottles and cans which in turn attract rodents and insects to the premises. The cabin is often occupied by a family or group that by its very presence excludes others from the premises.

2.5.3 Aids to Navigation

There are six (6) navigational aids in the unit. They are situated on Raymond-, Benson-, Prideaux-, Hand-, Swale-, and Brabant Islands.

2.6 VISITOR ACTIVITIES

2.6.1 Information

There are many visitors to the region that visit or travel through the Broken Group Islands each year for recreational purposes. Other visits involve the activities of several governmental agencies who have responsibilities for certain communication and resource protection aspects within the area.

The public activities in the islands include private and commercial recreation, commercial marine traffic, and traditional resource harvesting. Specifically, private recreation includes all forms of boating, camping, fishing, and scuba diving. Alternatively, commercial operators offer the same recreational opportunities to groups of visitors. In addition, there are sightseeing boat tours, water taxi services, and aircraft active within the unit. Commercial marine traffic includes tug boats and tows, fishing boats, small freighters, and log salvagers. Traditional resource harvesting within the island includes commercial trolling for salmon, trapping of Dungeness crab, and food gathering by natives. Native people traditionally harvest shellfish, herring roe, and marine plants, as well as hunt and trap black-tailed deer, mink and river otter.

The monitoring, control, regulation, and safety of these visitors and their activities involves Parks, D.O.E., Federal Fisheries, the Department of Transport, the Canadian Coast Guard, the Canadian Military, the R.C.M.P., and the Department of Indian and Northern Affairs, and the Department of Energy, Mines and Resources.

The Park Warden Service has monitored visitor activities in the unit since 1977. Because a specific censusing methodology was never formalized, accurate numerical data that expresses trends in visitor use is lacking. However, it is evident from reviewing the year-end operational reports of the Seasonal Park Wardens in the unit that there has been a significant increase in visitor

use over the last decade. A comparison of the land and water use figures taken from the approved Unit Management Plan **(1980)** and the Operational Report, Broken Group Islands **(1986),** Pacific Rim National Park will be offered following (refer to 2.6.2.1 and **2.6.2.2)** as a gross indicator of increased visitation and use. It is significant to note that in **1980,** there were no commercial operators active in this unit. Today **(1986),** eighteen **(18)** independent commercial operators bring groups of visitors to the islands. The highest visitation occurs in July and August. Visitation peaks during the last week of July and the first week of August. During this visitor use peak, conflicts develop. Specifically, sail and paddle boaters resent the power boat user, wilderness seekers resent the overcrowded campgrounds, and all campers resent the noise of onsite air compressors used to fill SCUBA tanks.

All visitor activities have the potential to jeopardize public safety, to negatively impact the natural resources of the unit, and to result in user conflicts. Perhaps the greatest problems are determining the environmental impacts. establishing the capacities of the resources to sustain those impacts over time, and then to determine appropriate levels of vistor use. Without proper funding and adequate person-year content elaborate monitoring and visitor control programs are not feasible.

Activities within the unit that are contrary to laws or Parks Policy, may be curbed with increased levels of education and/or law enforcement. Therefore, management actions to cope with poaching, illegal camping, camp fires, vandalism, and theft are clear. Issues such as visitor conflict, the control of the activities of commercial operators, and the establishment of carrying capacities that would limit visitor dispersal and distribution. are much more complex. Those activities which involve public safety may be dealt with by better information, education, law enforcement, and the availability of respective rescue organizations, including the Park Warden Service.

2.6.2 Visitor Use Data

2.6.2.1 Land and Water Use (1980)

The figures were extracted directly from the "Unit Management Plan (1980)":

	Sail/Motor Vessels:		Speed Boats		Canoes/Kayaks:	
	#	%	#	%	#	%
1973	56	80.0	9	12.9	5	7.1
1975	83	53.2	37	23.7	36	23.1
1977	94	24.7	119	31.3	168	44.1
1978 1978	457	31.5	308	21.2	686	47.3

2.6.2.2 Land and Water Use (1986)

The figures were extracted directly from the Operational Report, Broken Group Islands (McIntosh, 1986):

MONTH:	CAMPERS:	MOORED BOATERS:	TOTALS:
June	699.0	717.0	1416.0
July	1085.0	1179.3	2264.3
August	2824.1	1506.6	4330.7
Sepember	1086.0	495.0	1581.0
TOTALS:	5694.1	3897.9	9592.0

Note: All figures are in person days. Moored boaters were calculated based on an approximate number of 3 persons per boat (exclusive of canoes and kayaks).

The highest intensity of visitation is now known to occur over an eight to ten week period between June and August of each year.

This period then, requires a concomitant intensification of park management activites.

2.6.3 Commercial Operators

2.6.3.1 Site-seeing Boat Tours

a) Canadian Princess Tours
This operator has ten boats which sail twice daily from Ucluelet. These boats visit the islands of the unit mainly March to July. However, during the mid-summer months, they fish extensively for bottom fish on reefs that are adjacent to the unit.

b) Subtidal Adventures
This operator has a single boat which may visit the islands in the unit daily, depending upon the wishes of the clientele. Also, this boat operates from Ucluelet as a taxi service to and from Bamfield. During this run, passengers may be ferried to beaches on the islands within the unit.

c) Suncoast Charters, Victoria
d) Kingfisher, Bamfield
e) Swiftsure Tours, Victoria

2.6.3.2. Sports Fishing Charters

a) Canadian Princess, Ucluelet
b) Sunset Charters, Ucluelet
c) Striker Charters, Ucluelet
d) Kingfisher, Bamfield
e) Bamfield Inn, Bamfield
This operator has fifteen boats available to clients who may access the unit daily during the summer months.
f) Karley Pacific, Port Alberni

g) Harrisons, Cigarette Cove
This operator runs for four guided boats which routinely fish the waters adjacent to and in the unit.

h) Islands West, Ucluelet

As a result of the success of the "Robertson Creek Salmonid Enhancement Program", there has been a noticeable increase in sports fishing within the unit. Private boats routinely travel thirty miles down the Albernie Canal to the Barkley Sound and Cree Island to fish for salmon.

2.6.3.3 Water Taxis

a Subtidal Adventures, Ucluelet

b M.V. Lady Rose, Port Alberni
This small coastal freighter brings hundred of campers to the Islands stopping three times weekly during June. July, August and September. The vessel docks at Gibralter Island where it is usually met by the Island's Warden who greets the prospective campers. The vessel company rents canoes and kayaks to clients. The majority of campers access the Islands via the Lady Rose.

2.6.3.4 Scuba Diving Charters

a) Subtidal Adventures, Ucluelet

b) Kingfisher, Bamfield

c) M.V. Skeena, Vancouver

d) M.V. Rendezvous, Port Alberni

The waters of the Broken Group Islands are well known for their benthic organisms and water clarity. Although some older ship-wrecks in the unit are yet to be discovered, those most note-worthy recent ones known are the vessels Vanlene and Thiepval.

2.6.3.5 Commercial Marine Traffic

Although commercial marine traffic is regular and frequent through the unit it does not significantly conflict with the recreationist. This traffic utilizes established routes and quickly passes on.

2.6.4 Resource Harvesting

Only very limited information is available about present and past levels of resource harvesting and its affects on the natural resources of the unit.

There is presently also extensive commercial fishing along the perimeter of the islands. Also, the Canadian Princess Charter boats are believed to take large amounts of bottom fish from the waters immediately adjacent to the islands. Operators of other charter and private boats also fish extensively for salmon throughout the unit during the summer months.

Harvesting by native Indian bands seems minimal at present, and the closures imposed because of paralytic shellfish poisoning, limit summer harvesting of oysters and clams.

2.7 PARK'S OPERATIONS

2.7.1 Park Warden Service

The Park Warden Service is active in the unit the year round. During the high-use period from June to September, a Seasonal Park Warden (GT-1) is assigned to the unit. The Park Warden lives in the Sitka Cabin and pays rent on its use. The cabin also functions a centre of operations. The Warden works a "ten on and four off shift", and vacates the premises during his days off. During the winter season, The islands are patrolled by permenantly employed Park Wardens (GT-2) when time and weather permits.

The patrols of the Seasonal Park Warden are carried out with the use of a thirteen foot long Mark II "Zodiak", powered by a twenty horsepower outboard motor. Park-owned VHF, Sea Lab VHF, and Department of Fisheries VHF radios, are utilized for communications within the unit. Radio communications are generally speaking marginal, and Park Wardens must usually travel seaward and clear of the islands, to be able to communicate with the Long Beach Unit of the park. The Park Warden on duty visits all the campgrounds every two days to offer assistance, to provide information and direction to the visitors, to gather user statistics, and to conduct minor site maintenance. He also meets the M.V. Lady Rose during her three weekly stops. Here he greets debarking visitors, in order to offer them information about park use. He monitors wildlife activities, marine traffic, sports fisherman, SCUBA divers, and sailboats anchored in the area. In addition, the Park Warden also provides rescue assistance when required. He is also an ex-officio Federal Fisheries officer. He may also be required to assist Federal Fisheries officers, Coast Guard officers, and the R.C.M.P. The Seasonal Park Warden assigned to the unit, undertakes a special project during his tour of duty which covers some aspect of the operation of the islands.

The "safety" aspects of the Park Warden's role can be split into personal and public safety aspects. Personal safety measures include a daily radio check-in with the Long Beach headquarters, the wearing of a survival suit when patrolling, availability of a "kill-switch" on his boat's outboard motor and the successful completion of a Power Squadron Navigation Course. His public safety responsibilities include the providing of first aid, and search and rescue search. The Park Warden is frequently the first person on the accident scene. Therefore, continual training and upgrading of skills are required.

The Seasonal Park Warden is supervised by a Senior Park Warden (GT-2) who routinely patrols the area during the summer. Other operational priorities often thwart these supervisory patrols during the high visitor-use period.

2.7.2 Park General Works

Within the scope of their busy schedule in the Long Beach unit of the park, a labor crew is assigned to the islands once per year. It consists usually of four persons, who carry out general maintenance over a two week period. More specific projects are scheduled on a contingency basis, and where possible, the Park Warden Service offers assistance.

2.7.3. Park Visitor Services

No Visitor Services personnel are permanently stationed within the unit. Information Centre personnel at the park's Long Beach Unit and at the hamlet of Bamfield, inform potential visitors about the unit. However, the multiple access points available to visitors to the unit, make the dispersing of park information difficult. A visitor information panel has been made available to the British Columbia Forest Services for their facility at Toquart Bay.

2.7.4. Park Interpretive Service

No Park Interpretive personnel is presently assigned to the unit. However, the Park Interpretive Service has produced an excellent series of references available to visitors to the unit. They are the result of recommendations made in the Broken Group Islands Interpretive Management Unit Plan, Information Package (Plewes, 1983). This reference material includes the Marine Chart #3670 of the Broken Group Islands, which presents information dealing with natural history, park facilities, visitor use and public safety, and other more specific information.

2.8 KNOWLEDGE GAPS

2.8.1 Tourism Development

It is expected that the development of tourism in Ucluelet, Bamfield, Port Alberni, and Tofino, will bring people to the

Barkley Sound. The natural beauty of the islands, the range of recreational opportunities they offer and their everincreasing accessibility almost assure this.

The development plans of commercial tour operators, guides, outfitters, etc., are unknown. The lands of the Indian Reserves may be leased and developed. What range of recreational activities and equipment will be developed to facilitate greater public access and use, and perhaps result in unacceptable resource impairments is not known at this point in time.

The potential impacts of industrial development that may occur in areas adjacent to the unit, are also unknown, and will likely be beyond the control of Parks anyway.

2.8.2 Limits of Use

What level of use the natural resources can sustain and remain natural, and the social sensibilities the park visitor will tolerate are questions yet to be studied and answered. Whether the person-year and dollar requirements to monitor visitor use, to determine carrying capacities, and to enforce policies will be made available is not known at this time. These issues will increase in importance as the use of the unit increases through time.

2.8.3. Pending Legislation and Policy

The formal gazetting of Pacific Rim National Park's three separate units is expected to take place in the near future. When this occurs: the Broken Group Island Unit, with the exclusion of the Indian Reserves, will automatically fall under the auspices of the National Parks Act. The full management ramifications of this event are yet to be determined.

Secondly, the impending establishment of a National Marine Park **Policy to** manage the water resource of the unit, is likely to

impose similarly new management ramifications, yet to be determined.

2.8.4 Publications

The findings of a marine archaeological study, conducted in the unit in the autumn of 1986, are still pending because further project work is to be conducted in 1987. The conclusions of this study might very well impose further management ramificatins.

The identification of specific areas within the campgrounds of the unit, that are known to be both archaeologically significant and environmentally sensitive, is to be undertaken in the summer of 1987.

2.9 POLICIES, DIRECTIVES AND MANAGEMENT DIRECTIVES

2.9.1 Parks Canada Policy

> "To protect for all time those places which are significant examples of Canada's natural and cultural heritage and also to encourage public understanding, appreciation and enjoyment of this heritage in ways which leave it unimpaired for future generations." (Parks Canada Policy, 1979)

2.9.2 National Administrative Directives

The following documents have direct application to and in this resources management plan:

- #2.4.2 - Procedures for the Application of the Environmental Assessment and Review Process
- #2.6.3 - Assistance to Disabled Boats
- #3.3.1 - Protection of Archaeological Resources
- #3.6.3 - First Aid to the Public
- #3.8.2 - Provision of Picnic Facilities
- #4.4.2 - Renewable Resource Harvesting in National Parks: Protection and Conservation Requirements
- #4.4.3 - Public Safety and Search and Rescue Procedures

#4.4.5 - Public Safety Posting of Warning Signs in Dangerous Areas
#4.4.6 - Law Enforcement - Park Warden Service
#4.4.7 - Motor Boats
#4.4.16 - **V.H.F.** Radio Procedure
#4.6.5 - Group Camps
#4.6.9 - Group Tenting Grounds
#4.6.13 - Pack In/Pack Out - Litter Control
#4.6.20 - Boat Docking and Mooring
#4.6.30 - Camping Activity

2.9.3 Western Regional Directives

#35 - National Historic Parks and Sites Planning Process
#47 - Backcountry Camping
#51 - Registration for Activities
#53 - Control of Helicopter Use
#55 - Hazardous Activities

2.9.4 Resource Management Objectives

The Resource Description and Analysis for the Park states:

> "Operational Resource Management Plans will be formulated by the Park's Resource Conservation Section to accommodate acceptable forms of recreational use, while assuring that such use does not exceed known inherent resource limitations, nor public safety standards." (Seel, 1982; p. 246)

3.0 ALTERNATIVE COURSES OF ACTION

3.1 Information

In consideration of

a) the background information given in the foregoing pages:
b) the Program Objectives of the Parks Canada Policy (1983);
c) the Resource Description and Analysis (1982);
d) the Broken Group Islands Unit Management Plan (1980), and...
e) the general resource protection mandate of the Resource Conservation Section of Pacific Rim National Park:

a number of management concerns that are pertinent to the Broken Group Islands, become apparent. These concerns and their resolution can be broadly classified under the headings Of Facility Management, Visitor Management and Operational Management.

3.2 Facility Management

3.2.1 Facility Management Requirements

The requirements for facility maintenance within the unit are:

a) to attend to the outstanding maintenance issues;
b) to develop a maintenance schedule based upon a current operational review;
c) to install or improve facilities in response to public demand and management review; and...
d) to identify present or potential impacts to the environment which may be ameliorated with facilities that directly control visitor use.

3.2.2 Facility Management Alternatives

3.2.2.1 Facility Management Alternative 1

Maintain the status quo and accept further deterioration of park facilities. Ignore the inevitable public pressure for facility maintenance and improvement. Accept whatever environmental impacts occur because of inadequate facilities and/or inadequate maintenance.

3.2.2.2 Facility Management Alternative 2

Upgrade all facilities to a level which exceeds these standards determined by Parks Canada. Yield to all public demands demands for facility improvement and addition. Install a system of facilities which prevent the user from causing any impact to the environment, including short impermanent damage.

3.2.2.3 Facility Management Alternative 3

Identify the outstanding maintenance issues. Single out those which may result in injury to the public, which may result in major or permanent environmental damage, or those which may precipitate public controversy or criticism. Given the said maintenance requirements, prepare a cost analysis that includes funding, person-years, and materials. Prepare a time table that identifies the maintenance project's goals and the responsible agents.

3.2.3 Facility Management Preferred Option

The preferred Facility Management Option is Alternative 3.

3.3 VISTOR MANAGEMENT

3.3.1 Visitor Management Requirements

There is a perceived need to exert controls upon those visitor activities which may:

a) damage park facilities, or threaten the natural, historical, or archaeological resources of the unit:
b) jeopardize public health and safety: and...
c) result in user conflict and detract from the visitor's park experience.

3.3.2 Visitor Management Alternatives

3.3.2.1 Visitor Management Alternative 1

Accept those visitor activities which negatively impact on the natural, historical and archaeological resources of the park and its facilities. Accept those activities which may jeopardize public healty and safety, those which may result in user conflict, or those which may detract from the park experience. Further, the maintenance of the status quo has the potential to exacerbate the afore-mentioned problems; assuming that private

and commercial use increases, and realizing that the needs of the various user groups are often in conflict. This alternative is contrary to mandate and policy.

3.3.2.2 Visitor Management Alternative 2

Exert controls upon public activities in order to negate all impacts to park resources and facilities. Restrict all activities that jeopardize public health and safety, or that may result in conflict of use.

3.3.2.3 Visitor Management Alternative 3

Actively curb all visitor activities deemed inappropriate in that they may potentially and significantly damage park resources and facilities, jeopardize visitor health and safety, or result in user conflict: considering limited availability of funding, person-years, management resources and legislation, determine a course of action that results in the abatement of the most inappropriate activities.

3.3.3 Preferred Option

The preferred Visitor Management Option is Alternative 3.

3.4 OPERATIONAL MANAGEMENT

3.4.1 Operational Management Requirements

The present visitor-use statistics compiled by the park's Resource Conservation Section indicate significant increases in the levels of use within the unit subsequent to the signing of Broken Group Islands Unit Management Plan (1980). This increased use is exerting ever greater demands on park operations. Therefore, some adjustment to currently practised operations and management activities is required in order to cope with the deteriorating situation.

3.4.2 Operational Management Alternatives

3.4.2.1 Operational Management Alternative 1

Continue to operate and manage as recommended in the Unit Management Plan (1980), despite the increase in private and commercial use. Deal with any management problems on a contingency basis.

3.4.2.2. Operational Management Alternative 2

Prepare an operational plan to cope with present problem issues, and anticipate future issues.

3.4.2.3. Operational Management Alternative 3

Prepare operational plans that involve and represent and needs of all sub-activities, that address and resolve the current problem issues, and that provide for proper funding and person-year allotments.

3.4.3 Operational Management Preferred Option

The preferred Operational Management Option is Alternative 3.

4.0 IMPLEMENTATION

4.1. Requirements

Based on the "preferred options" listed in Section 3.0 foregoing, the implementation requirements have been organized in a tabular format in order to present the information in a sequential and useful documentation (Please refer to the following fold-out pages for details).

Depending on the resolution of the issues presented in Section 2.8 (Knowledge Gaps), the anticipated future increases in unit visitation, and facing the reality of limited management

IMPLEMENTATION OF PARK MANAGEMENT OBJECTIVES

Facility Management - The Preferred Option Is Number Three.

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION		RESPONSIBILITY	$ REQUIREMENTS	MANPO REQUI
Outstanding maintenance issues (These involve public safety and health and environmental concerns)						
Public cabins on Jacques and Clarke Islands.	A policy review is recommended with regards to removal of these cabins.	Winter 87/88		Park Managers		
Clarke Cabin	Evaluate the soundness of the cabin including the foundation, roof and chimney. Carry out necessary repairs.	Every 5 years	All these maintenance requirements are presently outstanding and require immediate attention.	General Works	The cost to repair the cabin to a safe standard will be $ 1800.00	The requ for will
	Examine the stove and carry out all the necessary maintenance.	Annually each Spring			The cost of annual maintenance is approx. $500.00	The maint requi .08
	Replace stovepipe which is rusted throughout and is presently inadequately repaired with aluminum foil and is therefore a fire hazard.	Inspect annually each Spring				
	Repair or replace the deck around the cabin as it is collapsing and is a danger to the public	As required.				
	Clean out the substantial amounts of garbage left behind by summer campers.	Annually each Fall				
Jacques Cabin	Evaluate the soundness of the foundation, roof and chimney. Carry out necessary repairs.	Every 5 years	All these maintenance requirements are presently outstanding and require immediate attention.	General Works	As Above	As Ab
	Examine stove and carry out necessary maintenance.	Annually each Spring				
	Replace stovepipe which is rusted through and is a fire hazard.	Annually each Spring				
Privies - Willis Island Turret Island	Both privies are full and require re-location.	Spring 1987		General Works	Relocation costs 2 X $200 Mat. costs:	2 man
Trail Structures - Clarke Island	The large wooden ramp and bridge over the canal enroute to the water supply are rotted and collapsing. They constitute a public hazard. Rebuilding of both structures is required.	Spring 1987		General Works	Material costs will be:	The m requi will b

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS	MANPOWER REQUIREMENT
Operations and Maintenance Schedule/Operational Review					
Facility Inventory	It is recommended that a complete facility inventory be developed for the Broken Group Islands. All facilities should be described, mapped and photographed. This inventory would benefit all management activities in the Broken Group Islands.	Summer/Fall/Winter 1987	General Works Resource Conservation	The cost of carrying out a complete inventory will be $	The manpow requirement be: 2 X .25 = .
Operational Review - Operational Scheduling	All sub-activities should conduct an operational review of their activities involving the Broken Group Islands. Then a contemporary operations plan should be developed that accounts for such items as; present and future levels of visitation visitor needs, facility requirements (e.g.regular maintenance, additions etc.) management limitations (budget, person/years etc.) and scheduled activities (e.g. interpretive programs, resource conservation patrols, inter-agency activities etc.)	1987 - 1988	All sub-activities	N/A	
Facility Improvements/ New Facilities					
Establish a new campground Dodd Island UTM Co-ordinates CK 29.8, 21.2	In order to alleviate overcrowding now experienced during the "peak" of the season it is recommended that a new campground be established on Dodd Island. This island is located adjacent to the more heavily used Willis, Turret and Hand Island campsites. The preferred site on Dodd has been previously disturbed (Salsal Joe's garden), contains water and is well lighted. Facilities required are yet to be established.	Summer 1988	Park Managers Resource Conservation		
Gibralter Floats	Installation of new anchor chain and re-examination of the present anchoring system is required. Regular inspection of the anchors, chain and float superstructure should be written into the "regular maintenance requirements" part of the Operational Schedule. Anchor chain has been acquired, however, the installation procedure is yet to be worked out.	Spring 1987	General Works	The cost of installing anchor chain will be $ 1200.00	The manpow requirement install the chain will .04

	INFORMATION LACKING	REQUIREMENTS/TRAINING FOR PUBLIC AND STAFF INFORMATION PROGRAMS	DECISION POINTS	MONITORING EFFECTIVENESS	EARP
will) P/Y	The format for the inventory is yet to be established.	N/A	Establish the format for the facility. Assemble the materials and establish a timetable to carry out the inventory and then conduct the fieldwork. Assemble the inventory.	N/A	N/A
	The facility requirements at this site are yet to be established. The campground architecture, boundaries and other physical parameters of construction are yet to be established.	The establishment of this facility will require its inclusion in all public and staff information literature, programs etc.	A facility proposed must be presented to management - Resource Conservation. Management must consider the proposal for approval - Park Managers. On site facility designs will be carried for the managers perusal and ultimate approval-General Works. Materials must be assembled and construction carried out-General Works. Annual inspection and maintenance of this facility will be required - General Works.	Resource Conservation will monitor the public use of this facility and report any maintenance or management requirements.	An EARP will be conducted when the design plans are finally approved.
to anchor s	Additional anchor systems may be designed for these floats. A determination of structural repairs required by these floats is yet to be done.	N/A	Evaluate the repairs, if any, to be carried out to the floats-General Works. Assemble the repair materials and chain and transport to the site.-General Works. Carry out repairs and install the anchor chains-General Works. Annual inspection and maintenance will be required-General Works.	Resource Conservation will monitor use of this facility and report any maintenance or management requirements.	N/A

MANAGEMENT OBJECTIVES	METHODOLOGY			$ REQUIREMENTS	MANPOWER REQUIREMENTS
Clarke Float	A policy review is recommended with regards to the permanent removal of this float. This float went missing in the winter of 1986 and was re-located in the Pinkerton Islands. It is in a state of disrepair and requires substantial maintenance. If re-located and re-established the Clarke float would require: Re-installment of the flotation which has been removed. Repair and replacement of a number of deck planks. Repair and replacement of much of the surrounding railing. Relocation to the Clarke site from the Pinkerton Islands - 10 k.m. away. Installation and anchoring of new chain. Regular inspection and maintenance.			As Above	As Above
Sign Boards - Gibralter and Hand Islands	While there are a number of dispersal points for those entering the Broken Group Islands, it has been established that 80% of the visitors arrive via the Lady Rose to Gibralter, or Toquart Bay to Hand Island. Therefore, it is recommended that a sign board like that installed on Sitka cabin be placed at both sides. This sign should depict all facilities and their locations, specific policies or regulations pertaining to the user, public safety information and current resource information. This information is targeted to alleviate undesignated camping, resource impairment, and user conflict as well as enhance the visitor's experience.			here are two ost area nsiderations r sign ards, they are: i) The cost of design and development will be $500.00 ii) The cost of construction and installation will be $1000.00	The manpower requirements for lesign and levelopment will e _____ The manpower requirements for construction nstallation and nnual main-enance will be
	A sign committee must be established to consider all the information requirements of the various sub-activities.	Fall, 1987	Park Managers All sub-activities installation: General Works		
	The sign committee must design a prototype to be submitted for scrutiny and initiation of a management review process in order to yield an approved sign.	Spring, 1988			
	Construction and installation and annual inspection and maintenance.	Spring, 1989			

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS	MANPOWER REQUIREMENTS
Signage to Drinking Water	Drinking water locations, especially on Hand, Clarke, Benson and Gilbert Islands, are considerable distances from the campsites. All the campsites require maps and trail markers to drinking water supplies. These will require annual inspection and maintenance. Trail Markers Maps	Summer, 1987 Summer, 1988	General Works Visitor Services	The cost of design and development of these signs will be _____ The cost of construction and installation of the signs will be $500.00	The manpower requirements for design and dev. will be _____ The manpower requirements for construction, installation and annual maint. will be _____
Drinking Water	The quality and supply of drinking water is marginal at most campsites. Because of inadequate flow rate, damming is not recommended. However, trough and spigot systems would ensure water movement yet facilitate collection of undisturbed, clear water to campers. "Boil drinking water" notices would be attached to the troughs. (The water supply on Turret Island is troughed and spigotted and these small, inexpensive facilities provide a substantial convenience to the camper). Annual inspection and maintenance would be required.	Summer, 1988	General Works Resource Conservation	The cost of design, construction and installation will be $1500.00	The manpower requirements for design, construction and installation will be _____
Campground Markers	A suitable marker depicting the location of each campsite in the Broken Group Islands is recommended. These markers should be clearly visible from the water and would aid those new to the area or those visitors with inadequate navigation abilities. These markers would provide a service to the visitor and may diminish camping in undesignated areas. Annual inspection would be required.	Summer, 1988	General Works Resource Conservation	The cost of design, construction and installation will be $500.00	The manpower requirements for design, construction and installation will be _____

INFORMATION LACKING	REQUIREMENTS/TRAINING, ENFORCEMENT, PUBLIC STAFF INFORMATION PROGRAMS	DECISION POINTS	MONITORING EFFECTIVENESS	EARP
As Above	As Above	This float is missing and presumed stolen.		
The design concept and information details are yet to be established. The exact onsite locations are yet to be determined.	N/A	Seek management approval for the facility - Park Managers. Develop an information package that reflects the required message content - Visitor Services, Interpretation, Resource Conservation. Develop a materials, format and structural design for the signs - All sub-activities Install the signs - General Works	Resource Conservation will develop a monitory program to determine the effectiveness of these signs in terms of their message content and visitor use patterns.	An EARP will be conducted before installation of the signs.

INFORMATION LACKING	REQUIREMENTS/TRAINING, ENFORCEMENT, PUBLIC STAFF INFORMATION PROGRAMS	DECISION POINTS	MONITORING EFFECTIVENESS	EARP
N/A	N/A	Seek management approval for the signs - Park Managers. Develop the design and content format for the sign - Visitor Services. Install the signs - General Works.	N/A	N/A
Each water system will require its own design as flow rates, slope and general characteristics of each stream are different.	N/A	Develop the site designs for each system - General Works. Construct each facility and install them - General Works.	Resource Conservation will monitor each system throughout the summer to determine their effectiveness to provide a consistent flow of clear drinking water.	An EARP will be carried out at each site before facility installation occurs.
	The establishment of this facility will require its inclusion in information literature and programs.	Develop the marker designs - General Works. Construct and install the markers - General Works.	Resource Conservation will petition public reaction as to the effectiveness of the markers.	An EARP will be carried out at each site before marker installation occurs.

Visitor Management - The preferred option is number three.

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS	MANPOWER REQUIREMEN
Direct Controls Upon Visitors					
Law Enforcement	Many acts and regulations apply within the Broken Group Islands and several agencies are active in the unit including the R.C.M.P., Federal Fisheries, the Coast Guard, the military and the Warden Service. Anticipated gazetting of Pacific Rim National Park will allow the Warden Service a more active enforcement role through application of the National Parks Act. The Warden Service must identify all law enforcement issues as they relate to the primary objectives of visitor management namely, the reduction of resource impairment, the enhancement of public safety and the reduction of user conflict.	Spring, 1988.	Resource Conservation	The dollar requirements will be determined after the identification and establishment of the Warden Service role in interagency enforcement.	Identifica law enforc concerns a relate to objectives this plan interagenc discussion be carried with exist. Warden Ser personnel. Additional personnel a be identif: as a requi: after compl of interag discussion: the establi ment of the Warden Serv field role.
	The Warden Service must then determine all legislation and appropriate agency jurisdictions that apply in the Broken Group Islands.	Spring, 1988.			
	The ability of outside enforcement agencies to assist with the accomplishment of the visitor management objectives will require the development of a program which co-ordinates communications, scheduling (patrols and exercises in the unit), training and public relations.	Spring, 1989.			
	In anticipation of the imminent gazetting of Pacific Rim National Park, the park must develop the infrastructures necessary to apply the National Parks Act.				

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS	MA REC
Public Relations	Review the Broken Group Islands Information Package (Plewes, 1983) extracting those recommendations which apply to the objectives of visitor management. Additional information packages and/or in person programs are required from interpretation in consultation with Visitor Services and Resource Conservation. Information content within the packages should include: (i) encouragement and instruction of low impact utilization. (ii) identification of new park facilities within the unit. (iii) details of park policy including acceptable conduct within the unit. (iv) public safety advice. Furthermore, the various information packages should: (i) be specific to each user group including all commercial groups utilizing the unit. (ii) be designed to intercept visitors at all points of entry or departure to the Broken Group Islands including the M.V. Lady Rose.	While the various packages could be developed simultaneously, the timing of their implementation will vary respectively; e.g., information with respect to facilities would come on stream as the facilities are developed.	Interpretation and Visitor Services will plan and execute the work. The Park Warden Service will contribute to public safety, law enforcement and resource protection content.	If this plan is approved and implemented, Visitor Services, Interpretation and General Works will have to plan for capital costs of construction, (e.g. facilities for information dispersal), media development, (e.g. cost of printing, paper, graphics etc.) and program implementation and maintenance.	Int anc Ser prc pow out Exi War per suf dev tic Dis inf req War man the the paci
Management Policy	Because Sitka Cabin is strategically located and is the only manned facility in the unit it is required to serve as an Information Centre, Interpretive Centre, Warden Office, Rescue Base and residence. A management review and determination of this facilities operations intent and subsequent operational requirements is needed. The present facility and the staffing regime is not adequately providing all the aforementioned services.	1987 - 1988	All sub-activities	N/A	

INFORMATION LACKING	REQUIREMENTS/TRAINING ENFORCEMENT, PUBLIC/STAFF INFORMATION PROGRAMS		DECISION POINTS	MONITORING EFFECTIVENESS	EARP
A time frame for the gazetting of Pacific Rim National Park continues to be unknown.	The level of training required for personnel will be proportionate to the level of enforcement that will ultimately be determined by park managers. All GT-2 Park Wardens attend an advanced Law Enforcement Course. All GT-1 Seasonal Park Wardens attend a basic Law enforcement course. All GT-2 Park Wardens attend a training seminar for Federal Fisheries Officers, and Prov.Cons.Officers All Park Wardens (GT-2 & GT-1) attend a Power Squadron Course. <u>Enforcement</u> - ex-officio appointments must be renewed annually for seasonal wardens.	<u>Public Information</u> - The "information packages" developed for the unit should include the regulations that are enforced in the unit and that are required to achieve the objectives of the plan. The relevant regulations would be pertinent to resource protection and public safety. <u>Staff Information</u> - Parks staff must be informed of regulations relevant to resource protection and public safety.	In order to resolve and mesh implementation, scheduling & completion dates, the program is dependent on the Park Superintendent. While the plan is offering a correct sequence, the timing is yet to be established.	The objective of this course of action is to reduce resource impairment by co-ordinating and applying existing acts and legislation appropriate to the unit. Therefore, a methodology must be developed to measure and correlate trends in resource impairment or improvement with associated changes in enforcement tactics or application.	The benefits accrued with respect to resource protection and the socio-economic status of the unit are included with the EARP of the entire plan.

ER EMENTS	INFORMATION LACKING	REQUIREMENTS/TRAINING ENFORCEMENT, PUBLIC/STAFF INFORMATION PROGRAMS	DECISION POINTS	MONITORING EFFECTIVENESS	EARP
rretation sitor es will le the man- to carry e work. ing Park Service nel will e to p informa- content. rsal of ation may re additional n Service wer with completion of nformation ges.	The facility standards pending development and approval of this plan will be required for necessary information content. The long-term plans for facility and recreational development on the Indian Reserves within the unit is unknown. The long-term plans for commercial activities (e.g. SCUBA and fishing charters, cruises, water taxis, outfitters) is unknown.	- <u>Training</u> - N/A - <u>Enforcement</u> - N/A <u>Public Information</u> - The public must be informed that the network of "information packages" exists for the Broken Group Islands. Extension programs etc. should be developed to carry this out. <u>Staff Information</u> - Staff must be informed about the entire program and familiarized with the information content.	The plan, if approved, will depend on the respective sub-activities to complete their responsibilities within the time action schedule. In order to resolve and mesh implementation, scheduling and completion dates, the program is dependent on the park superintendent. While the plan is offering a correct sequence, the timing is yet to be established.		On site - each media facility that is to be installed shall be subject to EARP.

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS
Management Policy (Cont'd)	Because of the present and potential conflict between groups such as: power craft/paddle craft users, large groups (commercial outfitters, schools etc.)/single campers, resource extractors/conservationists and the use of diver's air compressors etc. determination of a use policy or re-zoning is suggested.	1987 - 1988	All sub-activities	N/A
Indirect Controls Upon Visitors				
Facilities	Aforementioned facilities including signboards, campground markers, fireboxes, additional privies, signage (drinking water) serve the objectives of visitor management.	1987 - 1988	All sub-activities	N/A
"Non-personal" components of the above Public Relations Section.	Canned programs, pamphlets, signs etc.	1987 - 1988	All sub-activities	N/A

MANAGEMENT OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS	MANPOWER REQUIREMENTS
Fireboxes	While the present policy allows campfires below the winter high tide mark this is proving impractical or impossible especially on campsites like Turret Island. Campfires in the duff present a potential fire hazard as well as damage the environment. It is recommended that a study be initiated to examine the potential of fireboxes (either at each individual tent site or larger communal boxes) to alleviate these problems.	Summer, 1987	Resource Conservation	The cost of construction and installation will be $3000.00	The manpower requirements for construction and installation will be .04
Additional Privies	Because of the size of the campground and or the number of people camping their is a need for one additional privie at each Hand, Benson and Willis campgrounds.	Summer, 1987	General Works	The cost of construction and installation will be $3000.00	The manpower requirements for const. and instal will be .04
Facilities To Ameliorate Environmental Impacts					
Signboards	See Above				
Trail Markers	See Above				
Campground Markers	See Above				
Fireboxes	See Above				
Additional Privies	See Above				

INFORMATION LACKING	REQUIREMENTS (INCLUDING ENFORCEMENT, PUBLIC, STAFF INFORMATION PROGRAMS	DECISION POINTS	MONITORING EFFECTIVENESS	EARP
The campgrounds requiring fireboxes, and their exact number and location are yet to be determined.	Installation of these facilities will require their inclusion in park information literature and programs.	Determine the firebox design - General Works. Determine the locations and numbers of fireboxes required - Resource Conservation. Construct and install the fireboxes - General Works.	Resource Conservation will petition the public and will monitor the effectiveness of the fireboxes through evaluation of illegal fire sites etc.	An EARP will be carried out at each site before the fireboxes are installed
The exact location for privie installation is yet to be determined.	Installation of these facilities will require their inclusion in park information literature and programs.	Determine the location for the privies - Resource Conservation Construct and install the privies - General Works	Resource Conservation will monitor public use and the effectiveness of these privies.	An EARP will be carried out at each site before the privies are installed

OPERATIONAL REQUIREMENTS - The preferred option is number three.

OPERATIONAL OBJECTIVES	METHODOLOGY	TIME ACTION	RESPONSIBILITY	$ REQUIREMENTS
Operational scheduling (all sub-activities)	See Facility Management, Management Objectives: - Operational Review - Operational Scheduling	As Above		
Management Guidelines	See Visitor Management, Management Objectives, Management Policy - Sitka Cabin - User Conflict.	As Above		
Law Enforcement	See Visitor Management, Management Objectives, Law Enforcement.	As Above		

APPENDICES

Appendix "A"

BROKEN GROUP ISLANDS - CAMPSITE USAGE SUMMARY - JUNE 1986

Campsite	Daily Peak Campsite Usage (camper days)	Mean Daily Campsite Usage (camper days)	Total Monthly Campsite Usage (camper days)	Percentage
Benson	13	2.4	72.0	10.2
Clarke	11	4.4	132.0	18.9
Gibraltar	15	4.1	123.0	17.6
Gilbert	7	1.7	51.0	7.3
Hand	12	3.4	102.0	14.6
Jacques	5	0.6	18.0	2.6
Turret	13	4.2	126.0	18.0
Willis	8	1.9	57.0	8.1
(Illegal)	5	0.6	18.0	2.6
TOTALS:	89	23.3	699.0	100.0

N.B. Figures are based on 19 census days out of a 30-day month.

Appendix "B"

BROKEN GROUP ISLANDS - CAMPSITE USAGE SUMMARY - JULY 1986

Campsite	Daily Peak Campsite Usage (camper days)	Mean Daily Campsite Usage (camper days)	Total Monthly Campsite Usage (camper days)	Percentage
Benson	12	2.4	74.4	6.9
Clarke	10	4.0	124.0	11.4
Gibraltar	14	9.2	285.2	26.3
Gilbert	6	2.2	68.2	6.3
Hand	20	7.5	232.5	21.4
Jacques	8	1.5	34.1	3.1
Turret	8	3.1	91.6	8.9
Willis	8	4.1	127.1	11.7
(Illegal)	6	1.4	43.4	4.0
TOTALS:	92	35.4	1085.0	100.0

N.B. Figures are based on 9 census days out of a 31-day month.

Appendix "C"

BROKEN GROUP ISLANDS - CAMPSITE USAGE SUMMARY - AUGUST 1986

Campsite	Daily Peak Campsite Usage (camper days)	Mean Daily Campsite Usage (camper days)	Total Monthly Campsite Usage (camper-days)	Percentage
Benson	20	8.3	257.3	9.1
Clarke	36	10.7	331.7	11.7
Gibraltar	19	13.8	427.8	15.2
Gilbert	22	9.4	291.4	10.3
Hand	27	14.2	440.2	15.6
Jacques	13	3.1	96.1	3.4
Turret	26	13.7	424.7	15.0
Willis	26	15.0	465.0	16.5
(Illegal)	13	2.9	89.9	3.2
TOTALS:	202	91.1	2824.1	100.0

N.B. Figures are based on 12 census days out of a 31-day month.

Appendix "D"

BROKEN GROUP ISLANDS - CAMPSITE USAGE SUMMARY - SEPTEMBER 1986

Campsite	Daily Peak Campsite Usage (camper days)	Mean Daily Campsite Usage (camper days)	Total Monthly Campsite Usage (camper days)	Percentage
Benson	7	2.4	72.0	6.6
Clarke	14	6.7	201.0	18.5
Gibraltar	14	5.6	168.0	15.5
Gilbert	5	1.3	39.0	3.6
Hand	16	7.4	222.0	20.5
Jacques	4	2.0	60.0	5.5
Turret	17	5.8	174.0	16.0
Willis	11	5.0	150.0	13.8
(Illegal)	0	0.0	0.0	0.0
TOTALS:	88	36.2	1086.0	100.0

N.B. Figures are based on 11 census days out of a 30-day month.

Appendix "E"

BROKEN GROUP ISLANDS - VESSEL USAGE SUMMARY - JUNE 1985

Vessel Type	Daily Peak Vessel Usage (vessel days)	Mean Daily Vessel Usage (vessel days)	Total Monthly Vessel Usage (vessel days)	Percentage
Sailboat	27	5.0	30.0	17.7
Motorboat	15	4.3	129.0	1.3
Motor Vessel	3	0.6	18.0	2.1
Canoe	12	2.2	66.0	7.8
Kayak	32	14.7	441.0	52.1
Fishing Vessel	10	1.4	42.0	5.0
TOTALS:	33	28.2	846.0	100.0

N.B. Figures are based on 13 census days out of a 30-day month

Appendix "F"

BROKEN GROUP ISLANDS - VESSEL USAGE SUMMARY - JULY 1986

Vessel Type	Daily Peak Vessel Usage (vessel days)	Mean Daily Vessel Usage (vessel days)	Total Monthly Vessel Usage (vessel days)	Percentage
Sailboat	10	8.1	251.1	22.7
Motorboat	7	3.2	99.2	9.0
Motor Vessel	2	0.5	15.5	1.4
Canoe	15	6.3	195.3	17.6
Kayak	27	17.3	536.3	48.5
Fishing Vessel	1	0.3	9.3	0.8
TOTALS:	62	35.5	1106.7	100.0

N.B. Figures are based on 9 census days out of a 30-day month.

Appendix "G"

BROKEN GROUP ISLANDS - VESSEL USAGE SUMMARY - AUGUST 1986

Vessel Type	Daily Peak Vessel Usage (vessel days)	Mean Daily Vessel Usage (vessel days)	Total Monthly Vessel Usage (vessel days)	Percentage
Sailboat	22	7.0	217.0	11.2
Motorboat	19	7.9	244.9	12.7
Motor Vessel	1	0.3	9.3	0.5
Canoe	38	16.0	496.0	25.7
Kayak	47	30.1	933.1	48.3
Fishing Vessel	4	1.0	31.0	1.6
TOTALS:	112	62.3	1931.3	100.0

N.B. Figures are based on 12 census days out of a 31-day month.

Appendix "H"

BROKEN GROUP ISLANDS - VESSEL USAGE SUMMARY - SEPTEMBER 1986

Vessel Type	Daily Peak Vessel Usage (vessel days)	Mean Daily Vessel Usage (vessel days)	Total Monthly Vessel Usage (vessel days)	Percentage
Sailboat	3	1.1	33.0	3.5
Motorboat	5	2.9	87.0	9.2
Motor Vessel	1	0.1	3.0	0.3
Canoe	19	4.5	135.0	14.2
Kayak	34	22.8	684.0	72.2
Fishing Vessel	1	0.2	6.0	0.6
TOTALS:	79	31.6	948.0	100.0

N.B. Figures are based on 11 census days out of a 30-day month

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