Management Plan

Wallace Bay National Wildlife Area

Peter Barkhouse

Canadian Wildlife Service

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1.0 INTRODUCTION

Wallace Bay National Wildlife Area is located along the Northumberland Strait in northeastern Nova Scotia (Figure 1). It encompasses 585 ha of marine and freshwater wetlands, forested uplands and fields. it affords habitat for many species of birds and other wildlife and is particularly important for migrant and nesting waterfowl.

Including Wallace Bay, there are 11 National Wildlife Areas (NWA) in the Atlantic Region (four Atlantic Provinces) and more than 40 in Canada that have been established since the NWA program was begun by the Canadian Wildlife Service (CWS) in 1966. The objectives of that Program are to protect and maintain important wildlife habitat, particularly for migratory birds, and to afford opportunities to improve habitat for wildlife use.

Each National Wildlife Area has its own specific features and must be managed according to its individual requirements. This document provides a plan which addresses those management considerations specific to Wallace Bay NWA. Many management considerations and requirements are similar to those of Tintamarre, Chignecto and Shepody NWA's located along the Upper Bay of Fundy coast. The principal similarity among the four sites is that they incorporate formerly tidal marshland that has been developed into shallowly-flooded freshwater wetland.

Wallace Bay NWA is managed by the Canadian Wildlife Service in collaboration with the Department of Lands and Forests, Nova Scotia, and with the cooperative assistance of Ducks Unlimited Canada. This document updates 1973 and 1980 management plans for Wallace Bay National Wildlife Area.

2. 0 OWNERSHIP AND STATUS

Wallace Bay National Wildlife Area was proposed for acquisition through the National Habitat Protection Program in 1966. Acquisition of the 585 ha site was begun in 1971 and was mostly complete by 1973. Four hundred and seventy-four hectares were acquired by fee simple purchase. The remaining 111 ha comprise undeeded wetland and an area of undetermined ownership.

The 585 ha Wallace Bay NWA was scheduled under the Wildlife Area Regulations on June 5, 1980 by order-in-council P.C. 1980-1479.

SECTION I OBJECTIVES,GOALS AND MANAGEMENT POLICIES

3. 0 OBJECTIVES AND GOALS

Wallace Bay National Wildlife Area will be managed to preserve and enhance wildlife and habitat values of the site according to the following goals. Active habitat manipulation will be conducted where appropriate to achieve those goals.

3.1 Management Goals

1. To provide productive freshwater wetlands for breeding and staging waterfowl and other marsh-dependent wildlife.

2. To develop and maintain a limited amount of brackish wetland habitat principally for staging waterfowl.

3. To protect and preserve important natural habitats and special ecological features including the area's saltmarshes and stands of red oak and large-toothed aspen.

4. To maintain and enhance the quality and wildlife values of upland habitats.

5. To provide the basis for sound management of Wallace Bay NWA by undertaking biological studies and monitoring programs.

6. To permit public use that is compatible with the habitat and wildlife resources of Wallace Bay NWA.

4.0 BIOLOGICAL MANAGKMEUT POLICIES

4.1 Habitat Development and Improvement

4.1.1 Freshwater Wetlands

Shallowly-flooded freshwater wetlands will be developed where appropriate at Wallace Bay NWA to provide production and migration habitat for waterfowl, breeding habitat for marshbirds, and habitat for other wildlife. Manipulation of those wetlands will be undertaken to maintain or enhance their productivity.

4.1.2 Brackish Water Wetlands

Development of brackish water wetlands will be limited to one small unit that will be managed to provide shallow water habitat, principally for waterfowl staging and migration.

4.1.3 Oldfields

Oldfield habitat (abandoned agricultural upland) at Wallace Bay NWA will be manipulated where appropriate to maintain early vegetation successional stages. That will provide habitat values that complement those of the wetlands (eg. waterfowl nesting sites) and maintain or increase habitat diversity.

4.1.4 Woodlands

Woodland habitats at Wallace Bay NWA will be manipulated where appropriate to maintain and enhance their value to wildlife. Those manipulations may be achieved through small clear-cut and selective thinning operations.

4.2 Biological Studies

The effects of past management practices and the need for future management will be assessed periodically through monitoring, inventories and other biological studies. The CWS will undertake studies and will encourage others to conduct studies designed to provide the biological information needed for the area's management. Other approved biological activities including waterfowl banding and research programs also will be conducted.

All study proposals and other activities must receive prior approval from the committee responsible for the management of Wallace Bay NWA. A complete study outline must accompany each request.

5.0 PUBLIC USE MANAGEMENT POLICIES

The principal purpose of Wallace Bay NWA is to protect and manage wildlife habitat for the benefit of wildlife; however, providing opportunity for public use of those resources is also an important function of the area. Various public activities will be permitted by authority of the Wildlife Area Regulations established under the Canada Wildlife Act. The public will be advised of permitted activities by notices posted at access points to the wildlife area.

Hunting, trapping and fishing will be permitted at Wallace Bay NWA in accordance with relevant federal and provincial regulations. Trapping must be conducted according to standards recommended by the federal/provincial committee on humane trapping.

Other public activities that are compatible with the objectives of the National Wildlife Area including wildlife observation, hiking and photography will be permitted.

6. 0 AGRICULTURAL LEASES

Three upland parcels totaling 10 ha (Figure 2) which have been traditionally leased to local farmers for agricultural purposes will be leased on an annual renewal basis providing that the agricultural practices continue to contribute to the quality and habitat diversity of the wildlife area.

SECTION II DESCRIPTION, HISTORICAL BACKGROUNDAND SUMMARY OF BIOLOGICAL RESOURCES

7. 0 DESCRIPTION AND HISTORICAL BACKGROUND

Wallace Bay KWA comprises 585 ha of tidal and freshwater wetlands and uplands at the upper limit of Wallace Harbor. The wildlife area is divided about equally into two components by a roadway and aboideau. The aboideau function is to stop the inflow of tidal waters at the roadway while permitting the outflow of freshwater. The first structure at the site, which was then known as the narrows, was built in 1838. It was 1886 before a functional aboideau was in place, and over the years, and as recently as 1984, major repairs and replacements have been necessary. Nevertheless, the 250 ha of wetlands on the western side of the roadway are largely, fresh and include marsh, swamp, impoundment and open channel.

Saltmarsh, tidal channels and impoundment encompass about 195 ha of the wildlife area on the harbor side of the aboideau. The wetlands are bordered by about 135 ha of woodland, agricultural land and oldfield within the wildlife area. The locations and extents of the major habitats of Wallace Bay NWA are shown in Figure 2. Their areas are as follows:

1. Impoundment - 127 ha; 2. Swamp and freshwater marsh - 115 ha; 3. Salt- marsh 114 ha;
4. Channel - 105 ha; 5. Woodland - 100 ha; 6. Agricultural land 10 ha; 7. Oldfield - 14 ha.

With the successful operation of the aboideau beginning about 1890 and the implementation of other improvements including ditching and seeding, the reclaimed marshland was capable of producing very heavy crops of hay. Although the land was rough, It was suitable for horse-drawn

hay-making equipment and the sale of hay made an important contribution to the economy of the area. That continued f or several years, but increased mechanization and a reduced labor force eventually resulted in less land being used each year. By 1950 the marshland was almost totally abandoned except for some pasture.

When the site was acquired by the Canadian Wildlife Service between 1971 and 1973 most of the reclaimed marshland was a composite of ponds, marsh and swamp and there was little evidence of

its former agricultural importance. The vegetation comprised several species including meadowsweet (Spiraea latifolia), broad-leaf (Spartina pectinata), blue-joint (Calamagrostis canadensis), round-stem bulrush (Scirpus validus), woolgrass (Scirpus cyperinus), wild rose (Rosa virginiana) and speckled alder (Alnus rugosa).

In 1973 with the cooperation of Ducks Unlimited 105 ha of marsh and swamp were impounded. The two separate shallowly-flooded wetlands that were developed provide an interspersion of open water and emergent vegetative cover consisting largely of cattail (Typha sp.), broad-leaf, woolgrass and burreed (Sparganium spp.). Submerged and floating aquatics include duckweed (Lemna minor) and pondweeds (Potamogeton pusillus, P. epihydrus).

Saltmarsh extends out along both sides of the tidal channel below the aboideau. It is primarily a 'high' saltmarsh as most of it is not flooded daily and the principal plant species is salt-meadow cord-grass (Spartina patens). Lower sections throughout the marsh and along tidal creeks that are flooded regularly support salt-marsh cord-grass (Spartina alterniflora) and higher sites, particularly along the inner margins, are favorable for black rush (Juncus gerardii). Saltmarsh ponds are located throughout the marsh.

In 1974 Ducks Unlimited in cooperation with the Canadian Wildlife Service impounded a 17.5 ha section of the saltmarsh and created a shallow brackish wetlands A narrow band of common three-square (Scirpus americanus) occupies portions of the shoreline and sago pondweed (Potamogeton pectinatus) grows abundantly throughout the impoundment. A separate 4 ha freshwater impoundment was developed at the upper and of the brackish wetland in 1978.

A small Acadian settlement was established at Wallace Harbor around 1710 (Francis Grant, Pers. comm.), and remnants of dikes built by those settlers indicate that they endeavored to reclaim the marshland from the sea. United Empire Loyalists from New York arrived and settled in the Wallace Bay area in 1784. Much of the area they settled was included in "the Remsheg Grant". Remsheg was the name given to the Wallace Bay area and was apparently derived from the Micmac Indian word Ramshaaak which is believed to mean "the place between" (Francis Grant, Pers. comm.).

Those settlers did not continue the pursuit began by the Acadians of diking the tidal marshes (excluding the aboideau operation described earlier), but rather harvested the wild saltmarsh

grasses. The practice of hand mowing the grass and building it into elevated stacks above the tides and of winter hauling over the ice continued until the early 20th century.

The tidal Wallace Bay channel or North Branch Remsheg as it was earlier called provided the area's inhabitants with fish and shellfish, principally smelt, gaspereau and oyster. Gaspereau and oyster are presently harvested commercially and the oyster are said to be of very high quality.

Wallace Bay KWA includes 134 ha of upland, largely bordering the south side of the wetlands. Most was cleared, following the 1784 settlement of the Wallace Bay area, and used as farmland. In The Valley of The Remsheg or History of Wallace Bay, Nova Scotia by H. R. Brown (1973) is a map of the area that shows the locations of 8 former homesteads, a store and a mill site within the present National Wildlife Area. All of those either had been abandoned or removed long before the wildlife area was established.

Forested habitat consists of 100 ha of a mixture of deciduous and evergreen species including trembling aspen (Populus tremuloides), red maple (Acer rubrum), white birch (Betula papyrifera), wire birch (B. populifolia), balsam fir (Abies balsamea) and spruce (Picea spp.).

A 5 ha 'island' located in the saltmarsh has a forest cover consisting of mature red oak (Quercus borealis), large-toothed aspen (Populus grandidentata) and white pine (Pinus strobus). It is a

vestige of the forest that once covered the uplands of the area before it was removed by settlers and lumbermen.

The wildlife area also includes 10 ha of cultivated upland that is used for pasture and hay and grain crops an a lease basis by neighboring farmers. Another 14 ha of upland are classed as “oldfield” habitat. Agricultural practices were abandoned and the vegetation comprises several species of grasses, herbaceous plants, shrubs and young trees. The tidal intrusion in 1984 killed much of the woody vegetation bordering the wetlands.

8.0 ANIMAL RESOURCES

8.1 Waterfowl

Eight species of waterfowl, including Green-winged Teal, Black Duck, Northern Pintail, Blue-winged Teal, Northern Shoveler, American Wigeon, Ring-necked Duck and Hooded Merganser, regularly breed at Wallace Bay NWA. Wood Duck, Mallard and Redhead broods have also been recorded, but not annually. The first Redhead brood was recorded in 1979 and during three of the next five years broods were observed on the wildlife area. The Amherst Point Sanctuary section of Chignecto NWA is the only other location in Nova Scotia where breeding Redheads have been recorded.

The present importance of Wallace Bay NWA to breeding waterfowl is largely the result of the wetland development and habitat improvement undertaken since 1972 by Ducks Unlimited in cooperation with the CWS. Immediately prior to that, annual production was less than 10 broods, whereas present production is 70-80 broods. An approximation of the present annual waterfowl production at Wallace Bay NWA is given in Table 1 along with pre-development production figures.

The wildlife area's wetlands provide important staging and migration habitat for waterfowl. Numbers of waterfowl steadily increase after about the middle of July with the arrival of post-breeding adults and young of the year. Peak numbers in excess of 1000 birds occur about the middle of September.

The tidal portions of the NWA including the brackish impoundment are frequented by daytime-feeding waterfowl, whereas the freshwater wetlands are particularly important as night roosts.

The principal migrant and staging waterfowl at Wallace Bay NWA are Green-winged Teal, Black Duck and Blue-winged Teal. Other species including Canada Goose, American Wigeon, Ring-necked Duck, Hooded Merganser and Common Merganser also commonly occur, but in smaller numbers. Maximum numbers of those species and a list of other waterfowl species that frequent the wildlife area are presented in Table 2.

8.2 Marshbirds

Various species of marshbirds including Pied-billed Grebe, American Bittern, Sora, American Coot and Common Snipe regularly breed at Wallace Bay NWA. Other species including Least Bittern, Virginia Rail and Marsh Wren have been recorded occasionally and presumably breed irregularly. Pied-billed Grebe and Sora are the most abundant, and recent surveys indicate that 40 to 50 pairs of both species nest on the two freshwater impoundments.

8.3 Other Birds

A list of 155 species of birds that either have been recorded at Wallace Bay NWA or that with most likelihood occur there is presented in Appendix 1. An indication of the status of each species is given. The list includes 123 species in addition to waterfowl and marshbirds. A pair of Bald Eagles that traditionally nested just outside the boundary have selected a new nest site within the wildlife area.

8.4 Mammals

Most of the common land and freshwater mammals of Nova Scotia occur at Wallace Bay NWA. Appendix II list 24 species. Most are inconspicuous either by their nature or by being uncommon. The muskrat is a notable exception as it is both abundant and an active daytime resident of the freshwater wetlands.

8.5 Fish, Amphibians and Reptiles

A list of fish, amphibians and reptiles of Wallace Bay NWA is presented in Appendix III. The amphibian and reptile fauna likely comprises most of the small number of species that commonly occur in the region although inventories have not been conducted. Mine fish species are listed, but other marine fish undoubtedly occur. Gaspereau (Alewife) are harvested commercially with nets set in the tidal channel next to the aboiteau. American Eel are also taken in traps set by the run through the aboiteau. Ninespine sticklebacks are abundant in the shallow freshwater wetlands.

SECTION III OPERATIONAL MANAGEMENT PLAN

9. 0 HABITAT HAMAGEMENT

9.1 Wetlands

Five management units totaling 177 ha were developed with the cooperation of Ducks Unlimited at Wallace Bay NWA during 1973 to 1979. The locations of those units are shown in Figure 2 and their areas and years of initial development in Table 3. Details of control structure and dike designs, dimensions and elevations, as well as dike alignment and structure locations, are shown on plans prepared by Ducks Unlimited from 1975 aerial photography (Appendix V).

Habitat conditions and wildlife values of management units are assessed every third year, and on the basis of that information operational management plans are developed for the following three-year period. The schedule of proposed management events for the 1985 to 1987 period is given in Appendix IV. The operational plan will be revised in 1987 and every third year thereafter.

9.2 Woodlands

There are no specific plans to manage the 100 ha of woodlands at Wallace Bay NWA; however, investigations will be conducted to evaluate wildlife use and habitat characteristics. On the basis of those investigations small-scale operations such as selective tree harvest and clear-cutting may be conducted where appropriate to improve wildlife values.

9.3 Oldfields

Some of the 14 ha of oldfield habitat (Figure 2) at Wallace Bay NWA will be manipulated to maintain early vegetation successional stages. That 19 manipulation primarily will involve hand-removal of colonizing trees. That operation will commence in 1985 with as much of the 14 ha cleared as time permits. That operation should be repeated every five years.

10.0 BIOLOGICAL STUDIES

10.1 Monitoring

The managed-wetland monitoring program includes marshbird and waterfowl brood surveys, muskrat house counts, invertebrate, vegetation, water quality and substrate sampling and water depth measurements. That program was scheduled for 1984, but was canceled because of major aboideau repair operations. It will be conducted in 1987 and every third year thereafter.

10. 2 Inventories

Collection of data to update or fill in gaps in information on the biological resources of Wallace Bay NWA will be conducted on a continuing basis as warranted and as resources permit. Among other things, information is required on songbird and small mammal populations, species composition and abundance of upland vegetation and winter distribution of mammals, particularly white-tailed deer.

10. 3 Research

A research project dealing with nutrient production and flow within saltmarshes along the Northumberland Strait was conducted at Wallace Bay NWA. That research contributed to the understanding of the effects of impoundment on saltmarsh nutrient export. Possibilities for research on other major wildlife and habitat features of Wallace Bay NWA will be explored. Emphasis will be given to research relating to wetland ecology and waterfowl and marshland species ecology; however, there are no specific plans for the near future.

11. 0 MAINTENANCE

Maintenance of boundaries, entrance and regulatory signs, access roads and field accommodations at Wallace Bay NWA is an annual requirement. The 21 km of boundary are inspected and where necessary the lines are cleared and signs replaced. Entrance signs are maintained at conspicuous sites and regulations signs at all main access points. Field accommodations include a small cabin.

CWS habitat staff and Ducks Unlimited personnel conduct regular inspections of wetland developments including dikes, water control structures and water levels. Ducks Unlimited perform. repairs and necessary maintenance of water control structures and dikes. CWS habitat staff are responsible for conducting inspections and enforcing the wildlife area regulations.

12.0 PUBLIC ACTIVITIES

The most intensive public uses of Wallace Bay NWA are waterfowl hunting and muskrat trapping. Muskrat trapping pressure and harvest is monitored each fall trapping season. The opening day waterfowl hunt has been monitored on several previous occasions and will be monitored periodically every five years beginning in 1986.

Wallace Bay NWA is used only to a limited extent for such activities as hiking, wildlife observation and photography. Special facilities including trails, observation sites, etc. have not been developed and it is not expected that such facilities will be developed in the near future.

13.0 RESOURCE REQUIREMENTS

Wallace Bay NWA is managed by CWS habitat staff located at the Atlantic Regional office in Sackville, New Brunswick. Resources appropriated to the management of Wallace Bay NWA from the habitat program have been in the order of 0.10 PY and $1000 O&M annually for the past five

years. Other resources including seasonal employees, special employment programs and Ducks Unlimited have made possible many activities at Wallace Bay NWA.

Resources are principally required for maintenance, biological studies and habitat management. Annual resource requirements will vary; however, averaged annual estimates are as follows:

	PY	O&M
a) Maintenance	0.10	$1,000
b) Biological Studies	0.20	2,000
c) Habitat Management	0.05	2,000
	0.35	$5,000

The above are very preliminary estimates, but are believed to be basic requirements for the management of Wallace Bay NWA as outlined in this document. It will be possible to use this as a functional operational plan only if increased resources to at least that level are made available.

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Figure 1. Location and extent of Wallace Bay National Wildlife Area.

Figure 2.Location and extent of major habitat types of Wallace Bay NWA.

Table 1. Approximation of Annual Waterfowl Production at Wallace Bay NWA and Comparison with Pre-development Production.

species	Pre-development	Post-development
Green-winged Teal	1	10
Black Duck	5	20
Mallard	-	1
Northern Pintail	1	2
Blue-winged Teal	1	25
Northern Shoveler	-	1
American Wigeon	-	1
Redhead	-	1
Ring-necked Duck	-	10
Hooded Merganser	-	1
Total	8	72

Table 2. **A) Peak numbers of most common waterfowl observed at Wallace Bay NWA during staging and migration periods.**
B) Other waterfowl recorded at Wallace Bay NWA in small numbers and irregularly during staging and migration periods.

A)

Species	Peak Numbers
Canada Goose	300
Green-winged Teal	250
Black Duck	600
Blue-winged Teal	200
American Wigeon	50
Ring-necked Duck	100
Greater Scaup	50
Hooded Merganser	75
Common Merganser	100

B)

Species	Species
Brant	Oldsquaw
Wood Duck	Black Scoter
Mallard	Surf Scoter
Northern Pintail	White-winged Scoter
Northern Shoveler	Common Goldeneye
Redhead	Bufflehead
Lesser Scaup	Ruddy Duck

Table 3. Areas and Years of Initial Development for Wallace Bay NWA Management Units.

Wetland Unit	Area (ha)	Initial Year
Impoundment 1	52.5	1973
Impoundment 2	44.5	1973
Impoundment 2 extension	8.5	1979
Impoundment 3	17.5	1974
Impoundment 3 extension	4.0	1973
Wallace Bay Unit 4	48.5	1977*

*The tidal gate on the main aboiteau was replaced to stabilize water levels and salinity.

Appendix I. List Of Birds Of Wallace Bay National Wildlife Area.

The status Of each species is indicated as follows:

B -breeding confirmed; b - breeding suspected; W -Winter;

R -Permanent resident; M- migrant; V -visitor;

S -summer.

*Uncommon

Species	Status	Species	Status
Red-throated Loon	M	Surf Scoter	M
Common Loon	M	White-winged Scoter	M
Pied-billed Grebe	B	Common Goldeneye	M
Double-crested Cormorant	M,V	Bufflehead	M
American Bittern	B	Hooded Merganser	B
Least Bittern	b	Common Merganser	M
Great Blue Heron	M	Red-breasted Merganser	M,V
Snowy Egret*	V		
Green-backed Heron*	V,S	Ruddy Duck*	V,S
Glossy Ibis*	V,S	Osprey	V,S
Brant	M	Bald Eagle	B
Canada Goose	M	Northern Harrier	b
Wood Duck	S	Sharp-shinned Hawk	M
Green-winged Teal	B	Northern Goshawk	V,R
Black Duck	B	Broad-winged Hawk	M
Mallard	B	Red-tailed Hawk	V,R
Northern Pintail	B	American Kestrel	b
Blue-winged Teal	B	Merlin	M
Northern Shoveler	B	Ring-necked Pheasant	B
American Wigeon	B	Ruffed Grouse	B
Redhead	B	Virginia Rail	B

Species	Status	Species	Status
Ring-necked Duck	B	Sora	B
Greater Scaup	M	American Coot	B
Lesser Scaup	M	Black-bellied Plover	M
Oldsquaw	M	Semipalmated Plover	M
Black Scoter	M	Killdeer	B
Greater Yellowlegs	M	Eastern Kingbird	b
Lesser Yellowlegs	M	Tree Swallow	B
Willet	B	Bank Swallow	V,S
Spotted Sandpiper	B	Cliff Swallow	V,S
Red Knot	M	Barn Swallow	V,S
Sanderling	M	Gray Jay	R
Semipalmated Sandpiper	M	Blue Jay	R
Least Sandpiper	M	American Crow	b
White-rumped Sandpiper	M	Common Raven	R
Dunlin	M	Black-capped Chickadee	b
Short-billed Dowitcher	M	Boreal Chickadee	b
Common Snipe	B	Red-breasted Nuthatch	b
American Woodcock	B	Brown Creeper	b
Bonaparte's Cull	M,V	Marsh Wren	b
Ring-billed Gull	V,S	Golden-crowned Kinglet	b
Herring Cull	V,R	Ruby-crowned Kinglet	B
Great Black-blacked Gull	V,R	Swainson's Thrush	B
Common Tern	V,S	Hermit Thrush	B
Rock Dove	R	American Robin	B
Black-billed Cuckoo	b	Gray Catbird	B
Great Horned Owl	B	Cedar Waxwing	V,S
Barred Owl	b	European Starling	B

Species	Status	Species	Status
Common Nighthawk	M,V	Red-eyed Vireo	B
Chimney Swift	M,V	Solitary Vireo	B
Ruby-throated Hummingbird	b	Tennessee Warbler	B
Belted Kingfisher	V	Nashville Warbler	B
Yellow-bellied Sapsucker	b	Northern Parula	M
Downy Woodpecker	b	Yellow Warbler	B
Hairy Woodpecker	b	Chestnut-sided Warbler	B
Northern Flicker	b	Magnolia Warbler	B
Pileated Woodpecker	V	Cape May Warbler	M
Olive-sided Flycatcher	b	Black-throated Blue Warbler	M
Eastern Wood-Pewee	b	Yellow-rumped Warbler	B
YeIlow-bellied Flycatcher	b	Black-throated Green Warbler	B
Alder Flycatcher	b	Blackburnian Warbler	B
Least Flycatcher	b	Palm Warbler	M
Bay-breasted Warbler	B	Blackpoll Warbler	M
Black-and-white Warbler	B	American Redstart	B
Ovenbird	B	Northern Waterthrush	B
Mourning Warbler	M	Common Yellowthroat	B
Wilson's Warbler	M	Canada Warbler	M
American Tree Sparrow	V,W	Chipping Sparrow	B
Savannah Sparrow	B	Sharp-tailed Sparrow B	
Fox Sparrow	M	Song Sparrow	B
Lincoln's Sparrow	b	Swamp Sparrow	B
White-throated Sparrow	B	Dark-eyed Junco	B
Snow Bunting	V,W	Bobolink	B
Red-winged Blackbird	B	Common Grackle	B
Brown-headed Cowbird	B	Pine Grosbeak	V,W
Purple Finch	V,S	Red Crossbill	V,W
White-winged Crossbill	V,W	Common Redpoll	V,W

Species	Status	Species	Status

Pine Siskin	V,W	American Goldfinch	V,W
Evening Grosbeak	R	House Sparrow	R

Appendix II. List of Mammals that Occur at Wallace Bay NWA.

Masked Shrew	Red Squirrel
Short-tailed Shrew	Beaver
Star-nosed Male	Deer Mouse
Little Brown Bat	Red-backed Vole
Black Bear	Meadow vole
Raccoon	Muskrat
Short-tailed Weasel	Meadow Jumping Mouse
Mink	Woodland Jumping Mouse
Striped Skunk	Porcupine
Red Fox	Snowshoe Hare
Bobcat	White-tailed Deer
Eastern Chipmunk	Woodchuck

Appendix III. List of fish, Amphibians and Reptiles known or suspected to occur at Wallace Bay UWA.

American Eel	Bull Frog
Caspereau	Green Frog

Brook Trout	Leopard Frog
Banded Killifish	Blue-spotted Salamander
Mummichog	Yellow-spotted Salamander
Fourspine Stickleback	Red-spotted Newt
Ninespine Stickleback	Eastern Redback Salamander
White Perch	Green Snake
Yellow Perch	Red-bellied Snake
American Toad	Maritime Carter Snake
Spring Peeper	

Appendix IV. 1985 to 1987 Impoundment operational Management Plan - Wallace Bay NWA

Wetland Unit	Recommended Action	Date
Impoundment I	No manipulation, maintain water	

	level at 53 cm below top of structure (TOS).	
Impoundment 2	Flush with freshwater to reduce salinity level.	Spring, 1985
	Periodic check of salinity level.	Spring-Summer 1985
	Maintain water level at 50. cm below TOS.	
Impoundment 2 extension	No manipulation, maintain water level at 2.5 cm above TOS.	
Impoundment 3	Draw-down for repair or replacement of structure.	November, 1985
	Reflood following repair.	November, 1985
	Maintain check of salinity level.	1985 to 1987
	Maintain water level at 32.5 cm below TOS.	
Impoundment 3 extension	No manipulation. Maintain water level at 15 cm below TOS.	
Management Unit 4	No action, establish operating water level.	1985