WETLANDS OF THE MARITIME PROVINCES:
Revised Documentation for the Wetlands Inventory

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Technical Report Series No. 267
Atlantic Region 1996
Canadian Wildlife Service

Cat. NO.: CW69-5/267E
ISBN 0-662-25285-3

This publication may be cited as:

Hanson, A.R. and Calkins, L. 1996.
Wetlands of the Maritime Provinces:
Revised Documentation for the Wetlands Inventory.
Technical Report No. 267.
Canadian Wildlife Service, Atlantic Region.

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PREFACE

This document summarizes information on the Wetland Protection, Mapping and Designation Program that was previously documented in the Wetland Inventory Report Series (Table 1). With the passage of time and advent of new technologies it was felt that a new computer-based summary document would ensure the continued dissemination of this information. This document also reflects changes in procedure by which hard copies of the inventory maps may be obtained, as well as revisions to the databases.

The Wetland Protection, Mapping and Designation Program was one of the first of its kind in Canada. The program had its origin with the inventory of wetlands in the Shubenacadie-Stewiacke River of central Nova Scotia, which was initiated in 1977. The objectives of the Wetland Protection, Mapping and Designation Program was to provide information on the vegetative life-forms, size, distribution, and wildlife value of all wetlands in New Brunswick, Nova Scotia and Prince Edward Island. This systematic approach to the inventory and evaluation of wetlands is the basis for landscape-level, long term management strategies, and decisions regarding the future of individual wetlands.

Table 1 - Wetland Inventory Report Series Number, Authors, Year Published, and Title.

No.	Author	Year	Title
1	Hudgins, E.J., Spence, M.S. & F. Payne	1983	Documentation for the Nova Scotia Wetlands Inventory
2	Wallace, M.J. & E.J. Hudgins	1983	Revised QUACK Users Guide for Nova Scotia Freshwater Wetlands Inventory
3	Smith, A.D.	1981	Prince Edward Island Freshwater Wetlands Inventory, Progress Report #1.
4	Ferguson, M.A.D.	1981	Prince Edward Island Freshwater Wetlands Inventory, Final Contract Report #1.
6	Hudgins, E.J.	1983	Workbook for the Initiation of the New Brunswick Wetlands Inventory.
7	Hudgins, E.J.	1983	Nova Scotia Wetlands Inventory: Summary Data Volumes I, IIA, IIB, III, IVA, IVB
8	Hudgins, E.J.	1983	Nova Scotia Wetlands Inventory: Provincial Summaries
8	Hudgins, E.J.	1987	Nova Scotia Wetlands Inventory: Summary Data (Revised 1987)
8	Lirette, D.	1988	Nova Scotia Wetlands Inventory: Summary Data (Revised 1988)
9	Hudgins, E.J.	1983	Nova Scotia Freshwater Wetlands Inventory for Pictou, Antigonish, and Guysborough Counties
10	Hudgins, E.J.	1983	Nova Scotia Freshwater Wetlands Inventory for Colchester and Cumberland Counties
11	Hudgins, E.J.	1983	Nova Scotia Freshwater Wetlands Inventory for Halifax and Hants Counties
12	Hudgins, E.J.	1983	Nova Scotia Freshwater Wetlands Inventory for Digby, Yarmouth and Shelburne Counties
13	Hudgins, E.J.	1983	Nova Scotia Freshwater Wetlands Inventory for Cape Breton Island
14	Hudgins, E.J.	1983	Nova Scotia Freshwater Wetlands Inventory for Annapolis, Kings, Queens, and Lunenburg Counties

Table 1 (cont'd) - Wetland Inventory Report Series			
15	Hudgins, E.J.	1983	Nova Scotia Coastal Wetlands Inventory for Pictou, Antigonish, and Guysborough Counties
16	Hudgins, E.J.	1983	Nova Scotia Coastal Wetlands Inventory for Colchester and Cumberland Counties
17	Hudgins, E.J.	1983	Nova Scotia Coastal Wetlands Inventory for Halifax and Hants Counties
18	Hudgins, E.J.	1983	Nova Scotia Coastal Wetlands Inventory for Digby, Yarmouth and Shelburne Counties
19	Hudgins, E.J.	1983	Nova Scotia Coastal Wetlands Inventory for Cape Breton Island
20	Hudgins, E.J.	1983	Nova Scotia Coastal Wetlands Inventory for Annapolis, Kings, Queens, and Lunenburg Counties
21	Hudgins, E.J.	1984	Prince Edward Island Wetlands Inventory: Summary Data, Coastal Unit Listings. Volumes I, IIA, IIB
22	Hudgins, E.J.	1984	Prince Edward Island Wetlands Inventory: Summary Data.
22	Hudgins, E.J.	1987	Prince Edward Island Wetlands Inventory: Summary Data (Revised 1987).
23	Hudgins, E.J.	1987	New Brunswick Wetlands Inventory: Final Report.
24	Pauley, L.J.	1987	New Brunswick Wetlands Inventory: Coastal and Freshwater Summary Data.
25	Pauley, L.J.	1987	New Brunswick Wetlands Inventory: Freshwater Wetlands Listing in Order of Watershed Number.
26	Pauley, L.J.	1987	New Brunswick Wetlands Inventory: Freshwater Wetlands Listing in Order of Location County.
27	Pauley, L.J.	1987	New Brunswick Wetlands Inventory: Freshwater Wetlands Listing of Wetlands Scoring 60+, 70+, 80+ in Order of Watershed Number.
28	Pauley, L.J.	1987	New Brunswick Wetlands Inventory: Freshwater Wetlands Listing of Wetlands Scoring 60+, 70+, 80+ in order of Location County.
29	Pauley, L.J.	1987	New Brunswick Wetlands Inventory: Coastal Unit Listings by Coastal Unit.

CHAPTER 1 - FRESHWATER WETLAND CLASSIFICATION

I. INTRODUCTION

The classification and evaluation of wetlands in the Maritime Provinces was based on the method described by Francis C. Golet (1973) in "Classification and Evaluation of Freshwater Wetlands as Wildlife Habitat in the Glaciated Northeast". Under this classification system, wetlands are described according to classes and subclasses of dominant vegetation type as well as the depth and permanence of surface water. Other components of the system include wetland size, topographic and hydrologic location, surrounding habitat types, proportions and interspersion of emergent vegetation and water, wetland juxtaposition and water chemistry. Based on these parameters, a modified Golet score can be calculated for each wetland. Scores range from 36 to 108, with a high score indicative of a wetland with high biological and habitat diversity.

II. PROCEDURE

1. Wetland Identification

Wetlands, regardless of size, were identified on colour air photos and drawn on base maps. In New Brunswick, wetlands were identified using 1:12,500 scale air photos taken during 1980 to 1985. Inventories for some areas of New Brunswick, primarily offshore islands, were based on black and white air photos taken during 1971 to 1973 at scales of 1: 10,000, 1: 18,000 and 1: 15,840. A total of 455 base maps at a 1: 15,840 scale (1 inch = 20 chain) were prepared.

The wetland inventory for Nova Scotia was based primarily on colour air photos taken during 1974 to 1978 at a scale of 1: 10,000. Supplemental photos used were taken during 1969, 1970 and 1973 at a scale of 1: 15,840, as well as 1: 20,000 scale photos taken during 1981. A total of 540 base maps at a 1: 15 840 scale (1 inch = 20 chain) were prepared.

The inventory for Prince Edward Island was based on 1: 10,000 scale, colour air photos taken during 1974. A total of 28 base maps at a 1:25 000 scale were prepared.

The size in hectares of each wetland was also placed on the basemap. Only those of 0.25 ha or more were classified. The size of most freshwater wetlands was determined using a dot grid, although a digitizer was used for some. The size of coastal wetlands was determined using a planimeter.

The following procedures were followed for the identification and delineation of wetlands:

a. Inclusion of lakes with wetlands bordering the lake:
   If the wetland was larger than the lake or surrounded the lake, the lake was included in the total wetland area. If the wetland bordered on a small part of the lake and was smaller in size than the lake, the lake was excluded from the wetland area.

b. Inclusion of marshy segments of large lakes:
   Large lakes sometimes had smaller, marshy coves or shallow areas; only these were mapped as wetlands, not the entire lake.

c. Wetlands extending along both sides of a stream:
   Such wetlands were considered as one wetland, including that segment of stream bordered by the wetland.

d. Separation of wetlands containing areas of definite, different vegetative types:
   Although all vegetative types of wetlands were included in the wetland, they were not separated into different types on the base map as it led to confusion when numbering them. Wetlands of a richer vegetative classification found within predominantly lower-rated vegetative wetlands were designated as subwetlands; subwetlands were delineated within the main wetland area and classified as separate wetlands. Deep marsh impoundments within predominantly lower-rating wetland areas are typical examples of subwetlands.

e. Classification of flowage areas created by dams:
   Wetlands created by damming of streams, such as beaver ponds, were most often classified as deep marsh (dead woody), or open-water (vegetated / non-vegetated).

2. Delineation of Watershed Units

All watercourses exiting to the coast were outlined as watersheds and named to the county of exit, although they often extended into adjacent counties. Wetlands overlapping county or watershed boundaries were arbitrarily assigned to one of the counties or watersheds. Small, independent river systems which exited to the coast were incorporated into adjacent watershed units. Boundaries of the watersheds correspond with the geographic contours between adjacent drainage basins. These boundaries were outlined on 1:50,000 topographical maps and then transferred to working copies. All coastal islands were considered as individual watersheds. Only two large islands off Cape Breton Island, Boulardarie Island and Isle Madame, contained more than one watershed.

3. Numbering System for Watersheds

Nova Scotia

The province of Nova Scotia consists of two main land masses: a mainland area and Cape Breton Island. Mainland watersheds were numbered per county clockwise around the coast. Due to the configuration of the coastline of the Bras d'Or Lakes, some minor changes were necessary. The numbering for each of the counties found on Cape Breton Island are as follows:

Inverness: Numbering begins at the southern end of Inverness county near the Inverness-Richmond county line and continues consecutively north along the Inverness county coast to the area of the Inverness-Pictou county line. The numbering continues in sequence near the southern Inverness-Victoria county line and follows the Bras d'Or Lake coastline south to the Inverness-Richmond county line.

Victoria: Watershed numbering begins at the northern Inverness-Victoria county line, bounding the coast on the Atlantic Ocean, and follows the coast south to the Inverness-Victoria county line, bounding on the Bras d'Or Lakes.

Richmond: Watershed numbering begins near the Inverness-Richmond county line, bounding on the Bras d'Or Lakes, and follows the coast east to the Richmond-Cape Breton county line. The numbering sequence continues at the Richmond-Cape Breton county line, bounding on the Atlantic Ocean, then continues west along the coast near the Inverness-Richmond county line.

Cape Breton: Numbering begins at the Bras d'Or Lake end of the Richmond-Cape Breton County line and follows the coastline north along the lake, then to Boulardarie Island, clockwise along the Atlantic Ocean coast to the Richmond-Cape Breton county line.

Coastal Islands: These are associated with the respective mainland county and treated as separate watershed units. Numbering is clockwise along the coast. Islands in Halifax county are numbered sequentially in a clockwise fashion along the coast but not as a continued sequence of the mainland watershed units. Islands large enough to contain more than one watershed were found only off the Cape Breton county and Richmond county coasts. Watersheds on these islands are numbered clockwise around their coasts in sequence with the previously numbered islands.

New Brunswick

Watersheds were numbered sequentially, clockwise along the coast from Cambellton to St. Stephen.

Prince Edward Island

Watersheds were numbered sequentially clockwise along the coast for each hydrometric division.

4. Numbering System for Wetlands

1. New Brunswick and Nova Scotia

Each wetland was given a unique, identifying number, according to modifications of numbering schemes devised by Day (1961) and Meeking (1983). The wetland number consists of three groups of numbers and/or letters separated by dashes or spaces. The subwetland code consists of two symbols, one alphabetic, the other numeric, separated by a dash or space. This code is appended to the main wetland number by a dash. Following is a brief explanation of possible combinations of symbols:

a. Wetland Numbers -
Examples: 208 - A - 1 208 - A - la 208 - 1 - 1 208- 1 - 1a

b. First Group of Symbols: **208** - designates the watershed number.

c. Second Group of Symbols: **A** **1**

A - designates a wetland located on or near the main stream which exits to the ocean, **not** on or near a tributary.

1 - designates the first tributary of a stream: a number in this position indicates the number of the tributary found on the stream. Tributaries are numbered in sequence upstream from the mouth of the main stream.

d. Third Group of Symbols: **1** **1a**

1 - designates the first wetland. Wetlands are numbered in sequence along the coast or upstream, for example: A1, A2, A3, etc.; 1 - 1, 1 - 2, 1 - 3, etc.

1a - designates a wetland which was identified after all wetland numbering was complete. Missed wetlands are given sub-letters a to z and are associated with the nearest wetland; in this case the nearest wetland was 1.

e. The Complete Wetland Number:
Examples:

667 A 1 indicates the first wetland found on or near mainstream **667** which is the Saint John River in New Brunswick, or Stirling Brook in Nova Scotia.

667 10 42 indicates the wetland 42 found on the tenth tributary of watershed 667.
667 10 42c indicates the third missed wetland associated with 667 10 42.

Individual wetlands are numbered consecutively along the coast or upstream: 667 A 1, 667 A 2, etc. Wetlands found on or near each tributary are numbered consecutively upstream: 667 5 1, 667 5 2, etc.

When the main stream enters and exits from the same lake, wetlands associated with the lake are numbered counter-clockwise around the lake to the point of exit of the main stream. Tributaries entering the lake are numbered counter-clockwise around the lake to the point of exit of the mainstream. Wetlands associated with lakes located on tributaries are numbered counter-clockwise around the lake, and all wetlands found on tributary branches flowing into the lake are numbered in sequence.

Prince Edward Island

Prince Edward Island differs from the other two provincial inventories in that the hydrometric division is used as a prefix to the watershed number. Watershed numbers are not unique e.g., watershed 1 occurs in each of the five hydrometric divisions.

III. FRESHWATER WETLAND CLASSIFICATION SYSTEM

The basis for the classification of freshwater wetlands in the Maritime provinces was the landmark work of F.C. Golet (1973) and Golet and Larson (1974). Since this early work other classification systems have been adopted in the United States (Cowardin *et al.* 1979) and Canada (National Wetlands Working Group 1988). The following description of Maritime Freshwater Wetlands Classification is based on Golet's original description of wetland and vegetation types.

The basis of the system is the classification of plant life forms. Five life forms and 18 sub-forms are recognized. These forms represent obvious divisions of vegetation: trees, shrubs, emergents, surface plants, and submergents. The basic life forms are further divided into sub-forms which reflect not only differences in structure, but differences in ecology and stand density as well.

Based on hydrological features, seven different wetland classes are recognized: open water, deep marsh, shallow marsh, seasonally flooded flats, meadow, shrub swamp, wood swamp, and bog. Each wetland class is comprised of several subclasses which have different vegetation. The wetland classes and subclasses in the freshwater wetlands inventory are described below. Numbers refer to codes used in the electronic database to denote the subclasses.

1. Wetland Classes

A. **Open Water**: refers to wetlands with water depths of one to three metres and consists of five subclasses:

1) vegetated: submergent, rooted aquatic plants growing to near the water surface. These plants may include: *Ceratophyllum demersum, Myriophyllum* sp., *Potamogeton* spp., *Utricularia* spp., *Ranunculus trichophyllus.*

2) non-vegetated: surface vegetation and near surface submergent vegetation is absent.

3) floating leaved: floating leaved non-rooted aquatics such as *Lemna minor, L. triscula, Spirodella* sp., *Wolfia* sp., *Ricciocarpus natans* may be present.

4) rooted floating leaved: rooted aquatic vegetation with leaves floating on the waters surface such as *Erasenia schreberi*, *Nymphae odorata*, *Nuphar variegatum*, *Nymphoides cordatum*, *Potamogeton* sp., may be present.

5) dead woody: dead spars are abundant. This habitat is often the result of beaver activity, flowage areas of dammed waterways, or old sawmill sites.

B. **Deep Marsh**: refers to wetlands that have an average water depth of 0.30 m to 1 m during the growing season. Emergent vegetation is usually dominant with surface and submergent vegetation present in open areas. It consists of nine subclasses:

6) vegetated: as under Open Water class.

7) non-vegetated: as under Open Water class.

8) dead woody: as under Open Water class

9) shrubby: shrubs such as *Myrica gale* are present.

10) robust: robust emergents such as *Typha* spp. are present

11) narrow leaved: narrow leaved emergents such as *Sparganium sp., Acorus calamus, Zizania aquatica,* and *Scirpus acutus* are present.

12) broad leaved: broad leaved emergents such as *Caltha palustris*, *Sagittaria* spp., *Pontederia cordata* are present. These plants are less than 1 m tall and found in water up to 0.50 m deep.

13) rooted floating leaved: as under Open Water class.

14) floating leaved: as under Open Water class.

C. **Shallow Marsh**: describes wetlands with an average water depth of less than 0.15 m during the growing season. Surface water may be absent during mid to late summer. Floating leaved plants and submergents are often present in deeper water areas that are devoid of emergent vegetation.

These wetlands are often dominated by emergent vegetation. This class consists of seven subclasses:

15) non-vegetated: a possible subclass applying to water collection in artificial structures such as gravel pits or water holding ponds where the substrate is comprised of rocks or gravel.

16) dead woody: as under Open Water class.

17) robust: as under Open Water class.

18) narrow leaved: as under Deep Marsh class.

19) broad leaved: as under Deep Marsh class.

20) rooted floating leaved: as under Open Water class.

21) floating leaved: as under Open Water class

D. **Seasonally Flooded Flats**: refers to extensive river floodplains where flooding to a depth of at least 0.30 m occurs annually during fall, winter and spring. During summer, the soil is saturated with surface water occurring in areas of lower elevation such as ox-bow ponds, drainage ditches and shallow depressions. This class incorporates vegetative components of the Meadow and Shrub Swamp, but its floodplain location makes it unique. Typically, emergent vegetation is dominant, but shrubs and scattered trees may be present. Seasonally Flooded Flats consist of two subclasses:

22) emergent: meadow emergents dominate with marsh emergents in wetter areas, especially along the watercourse.

23) shrub: shrubs such as *Alnus rugosa* or *Mryica gale* form the main vegetative component.

E. **Meadow**: refers to wetlands dominated by meadow emergents with up to 0.15 cm of surface water during the late fall, winter and early spring. The soil is saturated during the growing season and the surface is exposed, except in shallow depressions and drainage ditches. Meadow consists of two subclasses:

24) grazed: most of the grasses and sedges are selectively removed by grazing livestock. Shrubby species such as *Spirea latifolia*, *Juncus* spp. and *Scirpus* spp. may persist.

25) ungrazed: refers to wetlands where meadow emergents such as *Calamagrostis canadensis*, *Phalaris arundinacea* may form tall, pure stands. Various components of shrub swamp may be scattered throughout. A meadow may be the result of flooding and subsequent draining of a pond either through the activity of beaver or man. Ungrazed meadows may become shrub swamps or

wooded swamps if processes (flooding, ice scour, or grazing) do not continuously remove deciduous plants that try to establish on the site.

26) sedge: areas of predominantly *Carex* spp., often times associated with washed out beaver ponds or along the edges of large acidic lakes.

F. **Shrub swamp**: refers to wetlands dominated by shrubs where the soil is seasonally or permanently flooded with as much as 0.30 m of water. *Carex* spp. are often the ground cover under shrubs with meadow emergents occupying wetter areas. This class consists of three subclasses:

27) slender: tall slender shrubs such as *Acer rubrum* and *Alnus Rugosa* are the dominant species of vegetative cover.

28) compact: compact shrubs form the main vegetative cover, e.g., *Myrica gale.*

29) low sparse: low sparse shrubs form the main cover, e.g., *Spiraea latifolia, S. tomentosa.*

G. **Wood Swamp**: refers to wetlands dominated by trees growing in a muck soil. The soil surface may be seasonally flooded with up to 0.30 m of water. Several levels of vegetation may be present including trees, shrubs, and herbaceous plants. In mature wooded swamps, differences in elevation may result in pronounced micro-habitats, where trees and shrubs occupy the drier areas. Whereas marsh emergents and ferns may occupy the ephemeral pools of standing water. There are two subclasses:

30) Deciduous: deciduous trees such as *Acer rubrum*, and *Fraxinus nigra* are dominant.

31) Evergreen: evergreen trees such as *Thuja occidentalis* are dominant.

H. **Bog**: refers to wetlands where the accumulation of *Sphagnum* moss as peat determines the nature of the plant community. Floating *Sphagnum* mats may encroach over the surface of any open water. This class consists of three subclasses:

32) Woody: evergreen trees such as *Picea mariana*, and *Larix laricina* are present.

33) Shrubby: low compact shrubs form the main vegetative component, e.g., *Chamaedaphne calyculata, Rododendron canadense, Kalmia* spp.

34) Open: refers to areas of the bog occupied by low creeping shrubs such as *Vaccinium* spp., as well as *Carex* spp. and *Cladonia* spp.

2. Size Categories

Wetlands in the Maritime provinces range from less than one hectare acre to several thousand hectares in size. The size categories devised apply to individual wetlands as identified on aerial photographs. In interpreting the influence of size on a wetland's wildlife value, both the size and the juxtaposition of the wetland with others in a complex must be considered. The following size categories were devised for use in provincial or regional planning. In a more localized area, a 20 hectare wetland might be considered large.

Size Categories

1	0.25 - 2.0 ha
2	2.1 - 10.0 ha
3	10.1 - 40.0 ha
4	40.1 - 200.0 ha
5	200.1 - ∞

3. Site Types

Site type is a wetland descriptor based upon topographic and hydrologic location. Topographic location can be broadly categorized as either upland or bottomland. **Upland** sites lie above alluvial or outwash plains, stream valleys and floodplains. Most upland wetlands occur on bedrock, till, or small pockets of outwash overlying till; the water table is usually perched. **Bottomland** sites lie chiefly on the alluvium of stream floodplains, outwash plains or glacial lake deposits. Perched water tables may occur, but regional water tables are most common.

A wetland' s hydrologic location may be lakeside, streamside, deltaic or isolated. **Isolated** wetlands do not border any larger body of open water. Small streams may course through it, but the wetland is obviously not subordinate to the streams. Isolated wetlands usually owe their wetness as much to groundwater seepage and surface run off as to stream flow. **Streamside** wetlands occur along a large stream and occupy a part or all of its floodplain. A **lakeside** wetland occurs on the margin of a lake. A **deltaic** wetland lies at the point where a stream enters a lake. Site types as denoted in the electronic database are:

1. Upland: isolated
2. Upland: lakeside
3. Upland: streamside
4. Bottomland: isolated
5. Bottomland: lakeside
6. Bottomland: streamside
7. Bottomland: deltaic
7. Bottomland: seaside

4. Cover Types

The relative proportions of emergent vegetation and open water and their degree of interspersion are two of the most vital features affecting the value of a wetland as wildlife habitat. Collectively these features constitute the cover type, *sensu* Golet (1973). Cover refers to stands of plants on the periphery of, or interspersed with, areas of open water. Cover can include entire wetland classes (e.g., wooded swamp, shrub swamp) as well as stands of individual plants. 'Open Water' consists of the class open water (OW) and the smaller open water portions of marshes and bogs. The Maritime Wetland Inventory recognizes eight cover types. They are denoted in the database as follows:

1. Cover occupies more than 95 % of the wetland area.
2. Cover occupies 76 - 95 % of the wetland, occurring in a peripheral band.
3. Cover occupies 76 - 95 % of the wetland, occurring in dense patches or diffuse, open stands.
4. Cover occupies 26 - 75 % of the wetland, occurring in a peripheral band.
5. Cover occupies 26 - 75 % of the wetland, occurring in dense patches or diffuse, open stands.
6. Cover occupies 5 - 25 % of the wetland, occurring in a peripheral band.
7. Cover occupies 5 - 25 % of the wetland, occurring in dense patches or diffuse open stands.
8. Cover occupies less than 5 % of the wetland area.

5. Vegetative Interspersion

Since most wildlife species require more than one structural type of vegetation, their population density depends partly on the presence and length of certain kinds of edge. In this context, edge refers to the line of contact between two different sub-forms of vegetation. Whereas wildlife numbers are closely related to the total length of edge, wildlife diversity is a function of the number of kinds of edge. Small sub-form stands have more edge per unit of area than larger stands. Long, narrow strips of vegetation, especially those that border streams (riparian zones), are extremely significant to wildlife, and an important consideration during evaluation, even though the total area of such a strip might be quite small. Three levels of vegetative interspersion are recognized and are denoted in the database as follows:

1. **Low interspersion**: length and types of edge are at a minimum. The wetland consists of concentric life form and sub-life form zones or a single sub-form. Sub-form stands are large and unbroken.

2. **Moderate Interspersion**: edge is moderate in length and diversity. There is some irregularity in the distribution of sub-form stands, but life form zones remain largely intact.

3. **High Interspersion**: edge is abundant and consists of many kinds. Life form zones are broken into segments and scattered.

6. Surrounding Habitat

The nature of the surrounding habitat is a key feature determining a wetlands wildlife value. Waterfowl and most other wetland-wildlife depend upon suitable adjacent habitat for food and nesting. The surrounding habitat types also determine what upland species are likely to use the wetland. Furthermore, intense human activity adjacent to a wetland can deter many species from using it. Surrounding 'natural' habitat may serve as a buffer, reducing disturbance of wildlife and providing some of their habitat requirements. The broad surrounding habitat types below reflect the potential impacts of different land uses:

1. Agricultural or Open Land
2. Forest Land
3. Salt Marshes
4. Ocean

7. Additional Descriptive Components

The components described so far represent the most important ecological features determining a wetland's wildlife value. Other components, such as wetland juxtaposition, water chemistry, and wildlife development potential are useful in wetland evaluation (see next section) but are not employed in classification. The wetland development potential is a component that specifically evaluates the value of a wetland as a site for the future development of stable water level wildlife impoundments. Whereas wetland development potential is not included as a component of the wetland evaluation scoring scheme, it is described below.

The following factors were used in determining the wetland development potential

Rating	Wetland Size	Dominant Vegetation	Watershed
1 - Nil	< 2.0 ha	*Carex*	> 2590 ha
2 - Low	< 10.0 ha	*Calamagrostis*	< 2590 ha
3 - Moderate	< 20.0 ha	*Typha*	< 777 ha
4 - High	> 20.0 ha	*Sparganium, Scirpus*	< 390 ha

IV. CRITERIA FOR WETLAND EVALUATION

The primary objective of the Maritime Wetland Inventory program was the identification and classification of wetlands. Wetlands have been evaluated in respect to one or more of their various ecological and societal functions (Golet 1973, Ontario Wetlands Evaluation 1984, Stokoe *et al.* 1989, Bond *et al.* 1992, Manuel 1992, Hruby *et al.* 1995). It is important to remember the basis for the evaluation when interpreting the final evaluation score.

The evaluation of wetlands in the Maritime Provinces is based on Golet's system where wetlands are evaluated in terms of their value as wildlife habitat for a broad spectrum of species. The choice to consider virtually all wildlife species during evaluation, greatly influenced the evaluation criteria and relative importance. Although wildlife production and diversity are both reasonable goals, they are not strictly compatible. Whereas each species will have a specific set of habitat requirements, *i.e.* niche separation, no one wetland type will be optimum for all species. The broadness of the evaluation criteria reflect the over-riding influence of diversity.

Certain wetlands possess characteristics that render them unique or of outstanding value. For example, a wetland might support the only colony of Black Terns (*Childonias niger*) in an entire region. Such a wetland merits preservation, even though it might not score highly by this system. The Golet scoring system did not include subjective considerations, such as human activities, which may impact upon the wildlife habitat potential of the wetland. In some cases, proper control of land use practices can raise significantly a wetland's wildlife value. Alternatively societal values of wetlands are not considered in this scoring system (Manuel 1992). Wetlands that provide opportunities for waterfowl hunting, harvest of furbearers, berry-picking, or bird watching do not score any higher because of these characteristics. Lastly the wetland's potential as wildlife habitat via habitat manipulation was not included in the scoring system. Two wetlands with identical scores might be differentiated according to their potential for enhancement. This potential depends on such factors as topographic and hydrologic location.

Above all, the value of any wetland must be viewed in its proper context. The absolute value of a score is meaningless; the score has meaning only in relation to the scores of other wetlands. Any attempt to use scores in decision making must be sensitive to the importance of the scale of reference. Clearly, the Golet evaluation system can not be the sole basis on which wetland conservation and management activities are based.

The wetland evaluation system for New Brunswick and Nova Scotia (Table 2) and Prince Edward Island (Table 3) contain ten criteria and a relatively simple rating system. Each criteria has **specifications** describing three or more possible categories into which a given wetland might be placed. Specifications have been assigned ranks, ranging from three (highest value) to one (lowest value). During evaluation a wetland receives a rank for each of the criteria. If, for any criterion, more than one specification seems to fit the wetland, the ranks for those specifications are averaged. Since some criteria are more important than others, each has been given a fixed numerical value called a **significance coefficient**, ranging from 5 (most important criteria) to 1

(least important criteria). A sub-score is calculated for each criterion by multiplying the significance coefficient for that criterion by the rank given. Scores for all criteria are summed and a total **wetland score** is obtained. This final score represents, in a simple quantitative fashion, the wetland's relative wildlife value.

The lowest possible total score is 36 and the highest is 108. This implies, and rightly so, that all wetlands have some wildlife value. For some criteria, there are five categories of specifications and five corresponding ranks (3.0, 2.5, 2.0, 1.5, and 1.0). For other criteria, where our knowledge or measurement ability is less refined, only three categories of specifications and ranks (3.0, 2.0, and 1.0) are recognized. A brief description of each of the criteria follows.

1. Wetland class richness

This criterion describes the number of wetland classes present in a wetland, where 2 ha is the minimum area recognizable as a separate class. As class richness increases, so does the likelihood for greater wildlife species richness. Wetland class richness is the broadest and single most important criterion for evaluation.

2. Dominant wetland class

Some wetland classes have greater value than others for wildlife diversity and production, and certain classes provide the only suitable habitat for some species highly valued by man (e.g., waterfowl). Dominant life form of vegetation, water depth, and permanence of surface water are the major characteristics considered in ranking classes (see Table 1). The dominant class is the one that clearly occupies the greatest area. If two or more classes are co-dominant, the ranks are averaged.

3. Size Categories

Wetlands are ranked from largest to smallest, according to the general principle that as size increases, so does wildlife value. Greater size usually results in greater insulation from human disturbance, greater habitat diversity and greater wetland longevity. In addition, wetlands larger than 40 hectares are of great value to flocks of migrating waterfowl.

4. Subclass richness

This variable goes one step further than wetland class richness in assessing habitat diversity. Just as particular life forms characterize subclasses, particular sub-forms characterize subclasses. A wetland's broad wildlife value increases as the number of subclasses increases. A wetland segment must be at least 0.5 ha in size to be recognized as a separate subclass.

5. Site Type

Bottomland wetlands are generally more valuable than upland wetlands because of greater soil fertility, more sustained surface-water levels, and longer geological permanance. Similarly, wetlands associated with open water bodies are usually more valuable than isolated ones. Using this rationale, site types were grouped into three categories for evaluation.

6. Surrounding Habitat Types

Freshwater wetlands bordered by forest, agricultural/open land, or salt marsh are more valuable to wildlife than those adjacent to intensively developed land. Furthermore, diversity in the surrounding habitat (e.g., freshwater and saltwater habitats) increases the possibility of wildlife diversity within the wetland. The percentage of the surrounding occupied by less intensively developed types and the number of different types present determine the rank for this criterion.

7. Cover type

This variable can be assessed in wetlands consisting of one or many wetland classes, although its value is most evident in evaluating deep and shallow marshes. Studies suggest that equal areas of open water and emergent vegetation (hemi-marsh) in a wetland will provide optimal habitat for waterfowl and marshbirds in general (Weller and Spatcher 1965, McGilvrey 1968, Murkin *et al.* 1982). Highest ranks are thus given to wetlands with nearly equal proportions of cover and water. Areas with nearly total cover or total open water receive low ranks. In addition, cover interspersed with water is deemed more valuable than a band of cover surrounding open water.

8. Vegetative Interspersion

A wetland receives a rank for this criterion according to which interspersion type it approximates. High ranks are associated with an abundance of edge between subform stands, small size of such stands, and a large number of different kinds of edge.

9. Wetland Juxtaposition

Habitat diversity is usually higher if the wetland is located near other wetlands, especially if the adjacent wetlands contain different classes or subclasses. Moreover, the diversity value increases if these wetlands are interconnected by streams. In such cases, wildlife (especially waterfowl) can move safely between wetlands to best meet their habitat requirements.

10. Water Chemistry

Water chemistry influences the presence, abundance, and distribution of aquatic plants and invertebrates (Juday 1942; Moyle 1945, 1946; Jahn and Hunt 1964.) Specifications for pH classes were based upon Golet's (1973) data for 95 ponds and lakes in Massachusetts.

Table 2 - Nova Scotia and New Brunswick Wetland Evaluation Scheme. Abbreviations and terminology are explained in text.

Factor (Significance)	Rank = 3.0 Specifications	Rank =2.5 Specifications	Rank = 2.0 Specifications	Rank = 1.5 Specifications	Rank = 1.0 Specifications
Wetland Classes (5)	≥ 5 classes Score = 15	4 classes Score = 12.5	3 classes Score = 10	2 classes Score = 7.5	1 class Score= 5
Dominant Class (5)	SFF, DM: Score = 15	SM Score = 15	WS, SS Score = 10	OW, B Score = 7.5	M Score = 5
Size Category (5)	200 + ha Score = 15	40+ - 200.0 ha Score = 12.5	10+ - 40.0 ha Score = 10	2+ - 10.0 ha Score = 7.5	0.25 - 2.0 ha Score = 5
Subclass Richness (4)	10 subclasses Score = 12	6 - 9 subclasses Score = 10	4 - 5 subclasses Score = 8	2 - 3 subclasses Score = 6	1 subclass Score = 4
Site Type (4)	Bottomland - Lakeside, Streamside, or Deltaic: Score = 12		Bottomland - Isolated, Seaside; Upland - Lakeside, Streamside: Score = 8		Upland - Isolated: Score = 4
Adjacent Habitat that is either: 1) forest 2) agricultural/open 3) saltmarsh (4)	Two or more habitat classes constitute > 90% of surrounding habitat Score = 12		One or more habitat classes constitutes 50 - 90% of surrounding habitat. Score = 8. or One habitat class constitutes > 90% of surrounding habitat. Score = 8		One or more habitat class constitutes 50% of surrounding habitat Score = 4
Cover Type (3)	Type 5: Score = 9	Type 4: Score = 7.5	Types 3 or 7 Score =6	Types 1,2 or 6 Score = 4.5	Type 8: Score = 3
Interspersion (3)	High: Score = 9		Moderate: Score = 6		Low: Score = 3
Juxtaposition (2)	Type 1, 2 or 3: Score = 6		Type 4, 5 or 6: Score = 4		Type 7: Score = 2
Water Chemistry(1)	pH ≥ 7.5: Score = 3		pH = 6.5+ - 7.5: Score = 2		pH ≤ 6.5 Score = 1

Table 3 - Prince Edward Island Wetland Evaluation Scheme. Abbreviations, and terminology are explained in text.

Factor (Significance)	(Rank = 3.0) **Specifications**	(Rank =2.5) **Specifications**	(Rank = 2.0) **Specifications**	(Rank = 1.5) **Specifications**	(Rank = 1.0) **Specifications**
Wetland Classes (5)	≥5 classes: Score 15	4 classes: Score 2.5	3 classes: Score 10	2 classes: Score 7.5	1 class: Score 5
Dominant Class (5)	SFF, DM: Score 15	SM: Score 15	WS, SS: Score 10	OW, B: Score 7.5	M: Score 5
Size Category (5)	≥ 40.1 ha: Score 15	20.1 - 40.0 ha Score 12.5	8.1 - 20.0 ha Score 10	2.1 - 8.0 ha Score 7.5	0.25 - 2.0 ha Score 5
Subclass Richness (4)	10 subclasses Score 12	6 - 9 subclasses Score 10	4 - 5 subclasses Score 8	2 - 3 subclasses Score 6	1 subclass Score 4
Site Type (4)	Bottomland: Deltaic Streamside, or Lake-side: Score 12	Bottomland - Seaside, or Island: Score 10	Bottomland - Isolated Upland -Streamside or Lakeside: Score 8	Upland - Seaside or Island: Score 4	Upland - Isolated: Score 4
Adjacent Habitat that is either: 1)forest 2) agricultural/open 3) saltmarsh (4)	Two or more habitat classes constitute > 90% of surrounding habitat: Score 12		One or more habitat classes constitutes 50 - 90% of surrounding habitat: Score 8. or One habitat class constitutes > 90% of surrounding habitat: Score 8		One or more habitat class constitutes 50% of surrounding habitat: Score 4
Cover Type (3)	Type 5: Score 9	Type 4: Score 7.5	Types 3 or 7: Score 6	Types 1, 2, or 6: Score 4.5	Type 8: Score 3
Interspersion (3)	High: Score 9		Moderate: Score 6		Low: Score 3
Juxtaposition (2)	Type 1, 2 or 3: Score 6		Type 4, 5 or 6: Score 4		Type 7: Score 2
Water Chemistry(1)	pH ≥ 7.6: Score 3		pH = 6.5+ - 7.5: Score 2		pH ≤ 6.4: Score 1

CHAPTER 2 - COASTAL HABITAT CLASSIFICATION

I. INTRODUCTION

The coastal habitat classification scheme incorporates portions of a system developed by Cowardin *et al.* (1979) and Hyer (1963). Salt marshes are classified according to the ratio of high to low marsh and the number of ponds per hectare. All inter-tidal and subtidal marine and estuarine wetlands are classified along with their substrate or type, including the presence of vegetation, e.g., eelgrass beds (*Zostera marina*). Surrounding associated habitat such as beaches, sand dunes, spits, and near- shore islands were also classified due to their associated role in determining the intensity of use of wetlands by wildlife.

II. PROCEDURE

1. Coastal Habitat Identification

All coastal habitat was identified and classified through interpretation of colour air photographs. Habitat components were identified on colour air photos and drawn on base maps. In New Brunswick, habitats were identified using 1:12,500 scale air photos taken during 1980 to 1985. Inventories for some areas of New Brunswick, primarily offshore islands, were based on black and white air photos taken during 1971 to 1973 at scales of 1: 10,000, 1: 18,000 and 1: 15,840.

The wetland inventory for Nova Scotia was based primarily on colour air photos taken during 1974 to 1978 at a scale of 1: 10,000. Supplemental photos used were taken during 1969, 1970 and 1973 at a scale of 1: 15,840, as well as 1: 20,000 scale photos taken during 1981.

The inventory for Prince Edward Island was based on 1: 10,000 scale, colour air photos taken during 1974.

Wetlands were plotted and classified on plastic film overlaying the air photographs, and follow-up field checks confirmed tentative classifications. Wetland sizes were determined using a planimeter from the film overlays and plotted next to the classification symbols. All data were transferred to plastic chronaflex copies of 1:50,000 topographical maps.

2. Coastal Unit Delineation and Numbering

Prominent headlands along the coastline of Nova Scotia were selected as sites for coastal unit boundaries. The area contained between two headlands was defined as a coastal unit. Coastal units were numbered sequentially clockwise around the coast, starting at the New Brunswick-Cumberland County border.

III. COASTAL HABITAT CLASSIFICATION SYSTEM

The coastal unit score is calculated from: the sum of the scores of six coastal wetland types; five conditional factors affecting some or all of these types; subtidal and/or intertidal influence; the size of each type; and a value for the disturbance status of the unit. A description of classes of coastal habitat follows:

1. Salt Marsh: cord grass (*Spartina* spp.) dominated tidal wetlands.

a. **S^1 to S^5**: indicates the ratio of high to low marsh.

Low Marsh is defined as that portion of the salt marsh below mean high water that is usually flooded daily by tides. The dominant species present is *Spartina alterniflora.* Other species which may be present are *Pucinella maritima, Salicornia europaea, Suaeda maritima,* and *Atriplex patula.*

High Marsh is defined as that portion of the salt marsh above mean high water that is flooded only infrequently by the highest tides. The dominant vegetation is *Spartina patens* and *Pucinella americana.* Other species that may be present are *Juncus Gerardii, Scirpus maritima (paludosus), Glaux maritima, Atriplex patula, Carex paleacea, Solidago sempervirens, Distichlis spicata, Triglochin elata, Scirpus paludosus, Limonium nashii,* and *Plantago juncoides.*

b. **S_1 to S_3**: indicates the number of salt marsh pannes per hectare.

Pannes are defined as salt-marsh ponds found in either high or low marsh, with saline to brackish water depending on frequency of tidal flooding.

Examples:
$S^1{}_3$ where **S** = salt marsh; **1** = 20% low marsh, 80% high marsh; **3** = more than 1 pond per ha
$S^5{}_2$ where **S** = salt marsh; **5** = composition of 100% low marsh; **2** = 5-10 ponds per ten ha

The most valuable type of salt marsh for wildlife is a marsh classed $S^5{}_3$ where **5** denotes 100% low marsh and **1** denotes more than 1 pond per hectare. Scores decrease with decreasing amounts of low marsh and salt pannes. The lowest salt marsh scores occur for saltmarsh classed $S^1{}_0$, which denotes 80% high marsh without pannes. There is some overlap in the scoring as certain classifications were considered equal based on a geometrical model and a value judgment of the marsh type.

c. Size.

Larger areas of salt marsh receive higher scores. Salt marshes and saline ponds receive individual scores while contributing to the value of the unit score, thus the salt marsh score for the unit total may differ from the total of individual salt marsh scores in that unit.

d. Wave Exposure.

Unprotected or exposed marsh situated on an open, high-energy coastline tends to be more disturbed and of less value to wildlife and scores only 1. A protected marsh removed from a high energy coastline tends to be less disturbed and more accessible to organisms and scores 5 points.

e. Surrounding Habitat.

Marshes with associated mud flats are given higher scores, as this association is important in terms of the total productivity of the area. An associated intertidal mud flat receives 5 points while a sub-tidal mud flat receives a score of 1. Vegetated mud flats receive an additional 4 points. This situation may be especially valuable to waterfowl because the mud flat may serve as a feeding area near the marsh staging area.

2. Estuarine and Marine Flats

Estuarine Flats are deep water, tidal habitats and adjacent tidal wetlands. They usually are partially enclosed by land but have open, partly obstructed, or sporadic access to the ocean. Ocean water is at least occasionally diluted by freshwater runoff from the land.

E1 denotes subtidal, i.e., the substrate is continuously flooded.
E2 denotes intertidal, i.e., the substrate is exposed and flooded by tides.

Marine Flats are areas of open ocean overlying the near-shore bottom and its associated high-energy coastline. Marine habitats are exposed to the waves and currents of the open ocean, and water regimes are determined primarily by the ebb and flow of oceanic tides.

M1 denotes subtidal, i.e., the substrate is continuously submerged.
M2 denotes intertidal, i.e., the substrate is exposed and flooded by tides.

$\mathbf{F_1}$ to $\mathbf{F_7}$ denote substrate types, where:

$\mathbf{F_1}$ denotes sand, as defined by particle size 1.0 mm-2.0 mm on the longest axis.
$\mathbf{F_2}$ denotes sand-mud, as defined by particle sizes for $\mathbf{F_1}$ and $\mathbf{F_3}$. There may be a small organic component in the 'mud' of this substrate.
$\mathbf{F_3}$ denotes mud as defined by particle size of <1 mm on the longest axis. There may be a substantial organic component in this substrate.
$\mathbf{F_4}$ denotes sand-rock which includes: sand, gravel, cobble, and rock. Sand is defined by particle size 1.0-2.0 mm; gravel by particle size 2.0 mm-15 cm; cobble by particle size 15 cm-30 cm; rock by particle size greater than 30 cm.
$\mathbf{F_5}$ denotes clay-silt as defined by particle size <1 mm; this substrate is devoid of any organic component.

$\mathbf{F_6}$ denotes rock as defined by particle size >30 cm; this substrate includes boulders and bedrock.

$\mathbf{F_7}$ denotes a reef, i.e., a complete bedrock ledge.

v denotes a vegetated substrate, comprised of aquatic species ranging from eelgrass (*Zostera marina*) to various rockweeds (*Fucus* sp., *Ascophylum* sp.).

z: indicates an area vegetated at least in part by eelgrass.

The criteria for substrate classification is based on Hyer (1963). Examples of the notation for estuarine and marine flats are:

$\mathbf{E_1\ F_1 2^v}$ where **E** - estuarine; **1** - subtidal; $\mathbf{F_1}$ - sand substrate; **v** - vegetated.
$\mathbf{E_1\ F_6}$ where **E** - estuarine; **1** - subtidal; $\mathbf{F_6}$ - rock substrate.
$\mathbf{E_2\ F_4^z}$ where **E** - estuarine; **2** - intertidal; $\mathbf{F_4}$ - sand-rock substrate; **z** - eelgrass bed.

Marine flats are not generally used in scoring the unit. In a situation where the marine area is protected and has *Zostera* flats in close proximity, the marine flat is considered in the unit score. The score given an estuarine, or, in some cases a marine area, depends on four factors:

a. Tidal Regime
Subtidal areas are defined by the continuous presence of saline water over the substrate. An intertidal area is defined by the twice-daily inundation of sea water over the substrate. There may be little difference in the productivity of these two conditions, but the intertidal area is valued higher than a subtidal area because it is more accessible to a wider range of organisms.

b. Substrate or Flat Type
The value assigned a flat type ranges from the low score that rock or reef areas receive to the higher score that an organic mud flat receives. These scores indicate the productivity of the substrate types.

c. Vegetation
The vegetative community determines in part the suitability of the area as wildlife habitat. For this reason the unvegetated flat receives no points, while a flat that is vegetated with species such as *Ascophylum, Fucus*, and other rock weeds or small amounts of *Zostera* receives the slightly higher score of 5 points. The flat vegetated with *Zostera* receives a value of 10 points, as this vegetated condition is the most productive in terms of biomass.

d. Size
As the size of the flat increases, so does the value awarded that flat.

3. Beaches

Bm denotes a mud beach as defined by particle size <l mm.
Bs denotes a sand beach as defined by particle size > 1 mm on the longest axis.
Bc denotes a gravel or cobble beach as defined by particle size of 2.0 mm-15 cm (gravel), as well as 15-30 cm (cobble).
Br denotes a rock beach as defined by particle size >30 cm and includes boulders and bedrock.

The score given the beach component depends upon two factors:

a. Beach Type - mud and sand beaches are supra-tidal areas which provide suitable habitat for numerous fossorial organisms. These two types receive a score which is slightly greater than that of rock or cobble beach, because they are less penetrable substrates and thus are less favourable habitat for benthic organisms.

b. Size - as the size of the beach increases so does the value awarded to the area.

4. Dunes

D denotes a sand dune without vegetation
Dv denotes a dune with grasses (*Ammophila breviligulata, Elymus mollis*) and shrubs.
Dw denotes a wooded dune, i.e., vegetated with coniferous or deciduous trees.

The dune score depends on the presence of vegetation and its size. A sand dune receives a low score of 1, whereas a vegetated and wooded dune with plant species such as *Elymus mollis, Ammophila breviligulata, Agropyron repens, Myrica pennsylvanica* and other grass, shrub, or tree species present receives a score of 2. The size of the component increases its value.

5. Coastal Saline Pond

A coastal pond is formed behind a tide created barrier of sand to cobble sized particles. The water is saline to brackish in nature, depending on the influx of freshwater. The pond may be periodically open to the ocean or have a regular drainage opening to the ocean. Strong wave action may remove the barrier enirely.

Po denotes open water with an undetermined bottom.
Pv denotes vegetated open water with an undetermined bottom. Species of vegetation in these ponds include: *Zostera* , *Ruppia maritima,* and *Potamogeton pectinatus.*
P_1 denotes subtidal.
P_2 denotes intertidal.
F denotes substrate types as previously described.
v denotes a vegetated substrate as previously described for Estuarine and Marine Flats.

Examples: $P_1 F_1{}^v$: coastal saline pond, with vegetated, subtidal sandflats.
$P_2 F_2$: coastal saline pond with intertidal mud flats.

Coastal saline pond rating depends on five factors: whether the pond has an undetermined bottom; tidal effect; substrate or flat type; presence of vegetation; and size factor.

Coastal saline ponds where tidal influence cannot be determined consist of two types:

Po: an open pond where the substrate and tidal effect are determined and there is no vegetation.
Pv: a vegetated pond where the substrate and tidal effect are determined but the surface is vegetated with *Z. marina, Ruppia maritima* and/or *Potamogeton pectinatus.*

Coastal saline ponds where the tidal effect is known and the flat type is determined are scored as to whether the flats are subtidal or intertidal, with intertidal flats scoring higher than subtidal flats.

6. Islands

Iw denotes wooded
Is denotes shrub or heath
Ig denotes grass, dune
Ib denotes barren, rock

$\mathbf{I}^1$ denotes inhabited (disturbed)
$\mathbf{I}^2$ denotes uninhabited, relatively undisturbed, accessible
$\mathbf{I}^3$ denotes uninhabited, undisturbed, inaccessible.

Example: $\mathbf{Iw}^2$:denotes a wooded unihabitated island.

The island score for any unit results from the addition of two values:

a. A value for the disturbance status of the islands or island based on the premise that an island in its natural condition is of the greatest value simply because it is an undisturbed, unique habitat. Areas like this may provide habitat for plant or bird species, particularly colonial nesting birds. Thus the uninhabited, undisturbed and inaccessible island receives the value of 100 - 200 points. Islands that are uninhabited, relatively undisturbed, but accessible receive a value of 50 points. Inhabited, disturbed, accessible islands do not receive a value.

b. A value for the number of islands within a unit. This value is given on the premise that the greater the number of islands there are in a unit, the greater the value to the unit.

7. Disturbance Status of a unit

The score given for the disturbance status of a unit may be 0 in a disturbed area where residential or industrial development is extensive, or the score may be 100 in an undisturbed area.

IV. COASTAL HABITAT UNIT SCORING SYSTEM

Coastal units were assigned scores based on the following rating system.

1. Salt Marsh:

a. Vegetation and ponds

				Value
s^1_0				1
s^1_1	s^2_0			2
s^1_2	s^2_1	s^3_0		3
s^1_3	s^2_2	s^3_1	s^40	4
s^2_3	s^3_2	s^4_1	s^50	5
s^3_3	s^4_2	s^51		6
s^4_3	s^5_2			7
s^5_3				8

Value is based on the percentage of low marsh to high marsh and the number of ponds within that area.

b. Size

	Value
0 - < .25 hectares	1
.25 - < 2	2
2 - < 10	3
10 - < 40	4
40 - < 200	5
200- < 500	6
500- < 1000+	7

Value is based on the size of the marsh.

c. Exposure

Unprotected	1
Protected	5

d. Surrounding habitat

	Value	
Flats E_1	1	Estuarine, if vegetated or Zostera + 4 pt.
E_2	5	
M_1	1	Marine, if vegetated or Zostera+ 4 pt.
M_2	5	
P_1	1	Pond
P_2	5	
Po	1	
Pv	5	

Example: S^5_3, 8.0 ha., protected, nearby E_1 (v)

10 + 3 + 5 + 1 + 4 = 23

2. Flats Estuarine and Marine (E and M)

	Value
a. Tidal Regime	
E_2 or M_2 Intertidal	5
E_1 or M_1 Subtidal	1
b. Flat Type	
F_1 sand	2
F_2 sand mud	4
F_3 mud (organic)	5
F_4 sand rock	3
F_5 silt clay	3
F_6 rock	1
F_7 reef	1

If vegetated, add 5 extra points; if *Zostera*, 10 extra points.

Example: $E_1F^z{}_3 = 16$; $M_1F^z{}_3 = 16$

c. Size	Value
0 - < .25 hectares	1
.25 - < 2	2
2 - < 10	3
10 - < 40	4
40 - < 200	5
200 - < 500	6
500 - < 1000+	7

Value is based on the size of the flat.

Example: $E_2F^z{}_2$, 40 ha. = 5 + 4 + 10 + 4 = 23

3. Beach

a. Beach type	Value
Bm mud	2
Bs sand	2
Br rock	1
Bc cobble	1

b. Size	Value
0 - < .25 hectares	1
.25 - < 2	2
2 - < 10	3
10 - < 40	4
40 - < 200	5
200 - < 500	6
500 - 1000+	7

Example: Bs, 8 ha. = 2 + 3 = 5

4. Dune

a. Dune type

	Value
D - sand dune	1
Dv - dune vegetated with grasses and shrubs	2
Dw - wooded dune	2

b. Size

	Value
0 - < 0.25 hectares	1
0.25 - < 2	2
2 - < 10	3
10 - < 40	4
40 - < 200	5
200 - < 500	6
500 - 1000+	7

Value is based on the size of the dune.
Example: Dv, 8 ha. = 2 + 3 = 5

5. Coastal Saline Pond (P)

a.

	Value
Po - pond open, bottom undetermined	1
Pv - pond vegetated	14

b. Tidal Effect

	Value
P_1 subtidal	1
P_2 intertidal	5

c. Flats

	Value
F_1 sand	2
F_2 sand mud	4
F_3 mud	5
F_4 sand rock	3
F_5 silt clay	3
F_6 rock	1
F_7 reef	1

d. If vegetated (v or z) add 10 points.

e. Pond size

	Value
0 - < .25 hectares	1
.25 - < 2	2
2 - < 10	3
10 - < 40	4
40 - < 200	5
200 - < 500	6
500 - 1000+	7

Example: $P_1F_1^v$, 10 ha. = 1 + 2 + 10 + 3 = 16

Note: Saline pond value may be a sum of two types:

Example: P = Po, 2 ha. + $P_1F_1^v$, 10 ha. = 1 + 2 + 1 + 2 + 10 + 3 = 19

6. Islands

Iw - Islands wooded
Is - Island, shrub, heath
Ig - Island, grass, dune
Ib - Island, barren

a. Disturbance status of islands	Value
Inhabited	0
Disturbed	0
Accessible	0
Uninhabited	50
Relatively undisturbed	50
Accessible	50
Uninhabited	100
Undisturbed	100
Inaccessible	100

b. Number of islands	Value
1	4
2 - 4	16
5 - 9	36
10 - 19	64
20 - 49	100
50	144

7. Disturbance Status of Unit	Value
Relatively undisturbed	100
Disturbed	0

The total of all component values yield the unit score.

CHAPTER 3 - PRODUCTS

I. WETLAND ATLASES

Two atlas types were produced using the inventory database:

1. Sensitive Areas Atlas

The Nova Scotia Department of Lands and Forests, Wildlife Division, Kentville, Nova Scotia, produced an atlas of Nova Scotia on the 1:100,000 scale, using reductions of 1: 50,000 national topographic series topographical maps. Wildlife sensitive zones (e.g., osprey nests, eagle territories), saltmarshes, and freshwater wetlands with an evaluation score 65 and greater were shown.

2. Wetland Inventory Atlas

The Canadian Wildlife Service, Sackville, New Brunswick, produced a series of wetland atlases for the province on the 1:50,000 topographic map scale. All coastal habitats, their classification, sizes and coastal unit scores are shown. Freshwater wetlands and their watershed boundaries are also shown. A list of all vegetative classes found in each freshwater wetland is also shown with the dominant class heading the list. The wetland identification number, size (hectares), and score are shown for freshwater wetlands having an evaluation score of at least 60.

Coastal information was mapped directly from film overlays to chronaflex 1:50,000 master basemaps. Freshwater wetlands and information were first mapped on 1: 50,000 paper copies and then traced onto the corresponding 1: 50,000 chronaflex copies. Copies were then produced by ozalid printing with the master sheets being stored at CWS. Copies of Wetland Inventory Maps can be obtained through the Canadian Wildlife Service in Sackville, New Brunswick. Inventory maps can be viewed at the Canadian Wildlife Service office in Sackville or at other locations. A listing of agencies that have received copies of Inventory Maps is provided in Table 4.

Table 4 - Agencies that have received copies of Wetland Inventory Maps

Maps	Organization	Location
NS, NB, PEI	Canadian Wildlife Service	63 East Main St., Sackville NB E0A 3C0
NS	Fisheries and Oceans	1649 Hollis St, Halifax, N.S. B3J 2S7
NS, NB, PEI	Environmental Protection	Environment Canada, 5 th Floor, Queen Square 45 Alderney Drive, Dartmouth, NS, B2Y 2N6
NS, NB, PEI	Environment Library	Environment Canada, 5 th Floor, Queen Square 45 Alderney Drive, Dartmouth, NS, B2Y 2N6
NS, NB, PEI	Ducks Unlimited	9 Havelock St., Amherst, NS, B4H 4A1
NS	Nova Scotia Dept. Natural Resources	523 Prince St., Truro, NS, B2N 5B8
NS	NS Dept. Nat. Resources	136 Exhibition St., Kentville, NS, B4N 4E5
NS	Dalhousie University	Science Library
NS, NB, PEI	Nova Scotia Geomatics Centre	16 Station Street, Amherst, NS, B4H 3E3
NB	New Brunswick Dept. Natural Resources	Maritime Forestry Complex, Regent St., Fredericton, NB E3B 6H6
NB	New Brunswick Dept. of Environment	Argyle Place, 364 Argyle St., Fredericton
NB	New Brunswick Dept. of Municipal Affairs	Argyle Place, 364 Argyle St., Fredericton
NB, PEI	Fisheries and Oceans	343 Archibald St., Moncton, E1C 9B6
NB	Ducks Unlimited	752 Union St., Fredericton, NB E3A 3P2
NB	Mount Allison Univ.	Pickard-Bell Library, Sackville NB E0A 3C0
NB	University of NB	Main Library, Fredericton, NB
PEI	Environmental Protection	Environment Canada, Dominion Building, Queen St., Charlottetown, PEI, C1A 4A9
PEI	Fish & Wildlife Division Dept. of Env. Resources	11 Kent St., Charlottetown, PEI C1A 7N8
PEI	Univ of PEI	Robertson Library UPEI, Charlottetown

II. DATABASES

Data from the Maritime Wetland Mapping Program can be obtained through the Canadian Wildlife Service office in Sackville New Brunswick. This data can be downloaded in a multitude of PC file formats. The data can be imported into GIS as point data.

1. Description of NB and NS Wetland Inventory Databases

Locational Information

Field 1 COUNTY - Code for County where wetland is located.

The county codes for the province of New Brunswick are:

A = Albert	B = Cape Breton	C = Charlotte
G = Gloucester	J = Saint John	K = Kent
I = Kings	M= Madawaska	N = Northumberland
Q = Queens	R = Restigouche	S = Sunbury
V = Victoria	W= Westmorland	Y = York

The county codes for the province of Nova Scotia are:

A = Annapolis	B = Cape Breton	C = Colchester
D = Digby	E = Cumberland	F = Halifax
G = Guysborough	H = Hants	I = Inverness
K = Kings	L = Lunenburg	N = Antigonish
P = Pictou	Q = Queens	R = Richmond
S = Shelburne	V = Victoria	Y = Yarmouth

Wetland Identifier

Field 2 ISLAND - If on an island 'I'
Field 3 WATERSHED
Field 4 SUBSHED - Blank or letters 'A' to 'Z'
Field 5 TRIB - Tributary number
Field 6 INSTREAM - If wetland on the tributary 'A'
Field 7 WETLANDN - Wetland number
Field 8 MISSED - Letters 'A' to 'Z' used to avoid duplication of wetland identifier. Used for wetlands identified after wetland numbers initially assigned.

Map Information

Field 9 PHOTOYR - Year air photo taken that inventory based on
Field 10 AIR PHOTO - Line number and photo number

Field 11 TOPMAP1 - Topographical map (1:50,000) numeric prefix, e.g. 21
Field 12 TOPMAP2 - Topographical map (1:50,000) letter, e.g. H
Field 13 TOPMAP3 - Topographical map (1:50,000) numeric suffix, 12

Field 14 REFMAP1 - Letter designation of the 20 chain: 1 inch reference map.
Field 15 REFMAP2 - Numeric designation of the 20 chain: 1 inch reference map.

Wetland Information

Field 16 CLI - Canada Land Inventory suitability of habitat for waterfowl production
1 = No limits to production 2 = Very slight limitations 3 = Slight limitations
4 = Moderate limitations 5 = Moderately severe limitations
6 = Severe limitations 7 = Almost no production

Field 17 PEATLAND - Provincial peatlands inventory number (if applicable)

Field 18 FIELDCHK - Was a field check done on the air photo interpretation?
1 = No 2 = Ground 3 = Air

Field 19 VEGCL1 - Subclass of vegetation found in wetland (value 1-34).
Field 20 VEGCL2 - Subclass of vegetation found in wetland (value 1-34).
Field 21 VEGCL3 - Subclass of vegetation found in wetland (value 1-34).
Field 22 VEGCL4 - Subclass of vegetation found in wetland (value 1-34).
Field 23 VEGCL5 - Subclass of vegetation found in wetland (value 1-34).
Field 24 VEGCL6 - Subclass of vegetation found in wetland (value 1-34).
Field 25 VEGCL7 - Subclass of vegetation found in wetland (value 1-34).
Field 26 VEGCL8 - Subclass of vegetation found in wetland (value 1-34).
Field 27 VEGCL9 - Subclass of vegetation found in wetland (value 1-34).
Field 28 VEGCL10- Subclass of vegetation found in wetland (value 1-34).

Vegetative Subclasses found in wetlands:

Open Water (OW)	1 = Vegetated	2 = Non-vegetated	3 = Floating-leaved
	4 = Rooted-floating-leaved		5 = Dead-woody
Deep Marsh (DM)	6 = Vegetated	7 = Non-vegetated	8 = Dead-woody
	9 = Shrubby	10 = Robust	11 = Narrow-leaved
	12 = Broad-leaved	13 = Rooted-floating-leaved	14 = Floating-leaved

Shallow Marsh (SM)	15 = Non-vegetated	16 = Dead-woody	17 = Robust
	18 = Narrow-leaved	19 = Broad-leaved	
	20 = Rooted-floating-leaved		21 = Floating-leaved
Seasonally Flooded Flats (SFF)		22 = Emergent	23 = Shrubby
Meadow (M)	24 = Grazed	25 = Ungrazed	26 = Sedge
Shrub Swamp(SS)	27 = Slender	28 = Compact	29 = Low-sparse
Wooded Swamp (WS)		30 = Deciduous	31 = Evergreen
Bog (B)	32 = Wooded	33 = Shrubby	34 = Open

Field 29 DOMVEGCL - Dominant vegetation class

1 = Open Water (OW)	2 = Deep Marsh (DM)	3 = Shallow Marsh (SM)
4 = Seasonally Flooded Flat (SFF)	5 = Meadow (M)	6 = Shrub Swamp (SS)
7 = Wooded Swamp (WS)	8 = Bog (B)	

Field 30 SIZE - Size of wetland in hectares

Landscape Information

Field 31 ISOLAT - Juxtaposition of wetland

1) Hydrologically connected to other wetlands (different dominant vegetation class) or open water body within 1.6 km.
2) Hydrologically connected to other wetlands (same dominant vegetation class) within 0.4 km.
3) Wetland greater than 202 ha with greater than 3 or more wetland classes.
4) Hydrologically connected to other wetlands (different dominant vegetation class) or open water bodies from 1.6 - 5 km away.
5) Hydrologically connected to other wetlands (same dominant vegetation class) from 0.4 -0.8 km away.
6) Within 0.8 km of other wetlands (different dominant vegetation class) or open water bodies but not hydrologically connected.
7) No hydrologically connected wetland (same dominant vegetation class) within 1.6 km, or no other isolated wetlands (different dominant class) or open water body within 0.8 km.

Field 32 FIELD - Percentage of surrounding habitat that is forest.

Field 33 FARMOPEN - Percentage of surrounding habitat that is farmland or open

Field 34 SLTMARSH - Percentage of surrounding habitat that is saltmarsh

Field 35 OCEAN - Percentage of surrounding habitat that is ocean.

Field 36 SITETYP - Site type

1 = Upland Isolated	2 = Upland Streamside	3 = Upland Lakeside
4 = Bottomland Isolated	5 = Bottomland Lakeside	6 = Bottomland Streamside
7 = Bottomland Deltaic	8 = Bottomland Seaside	

Field 37 IMPOUND

1 = Active Manmade	2 = Active Beaver	3 = Active Ducks Unlimited
4 = Abandoned Manmade	5 = Abandoned Beaver	6 = Non-active DU

Limnological

Field 38 NUTINPT - Input of nutrients due to sewage

1 = Sewage Input Blank = No sewage input

Field 39 PHCLASS - Estimated pH category of surface water :

1 = 7.5+ 2 = 6.5 - 7.5 3 = 2 - 6.5

Vegetation

Field 40 - COVERTYP
Cover occupies:
95% of wetland = 1
76-95% of wetland in peripheral band= 2
76-95% of wetland in dense patches or diffuse stands = 3
26-75% of wetland in peripheral band= 4
26-75% of wetland in dense patches or diffuse stands = 5
5-25% of wetland in peripheral band= 6
5-25% of wetland in dense patches or diffuse stands = 7
less than 5% of wetland = 8

Field 41 VEGINTRS - Vegetative Interspersion

1 = Low 2 = Medium 3 = High

Ancillary Wetland Information

Field 42 DEVELOP - Potential to develop wetland as waterfowl impoundment

1 = Nil 2 = Low 3 = Moderate 4 = High

Field 43 GSCORE - Golet Score is given, and ranges from (36 - 108)

Field 44 PH - Actual field pH of water sample.

Field 45 CONDUCT - Actual field conductivity of water sample.
Field 46 TEMP - Actual field temperature of water sample.

Field 47 COLLECT - Collection site of water sample.

1= Inlet 2 = Outlet 3= Lakeside 4 = Streamside

Field 48 NWALOC - National Wildlife Area location code

TA = Tintamarre C = Cape Jourimain SH = Shepody

Field 49 NWALETT - Letter code for impoundment name

Field 50 NWANUM - Number code for impoundment name

Field 51 NWASUB - Subletter Code

Geographic Information based on North American Datum 1927.

Field 52 UTMEAST - UTM Easting of northeast corner of wetland

Field 53 UTMNORTH - UTM Northing of northeast corner of wetland

Field 54 UTMZONE - UTM Zone of northeast corner of wetland

Field 55 PROV - Province that the wetland is located in.

2. Description of PEI Wetland Inventory Database

Wetland Identification

Field 1 TY - Code for the type of wetland.

1 = Freshwater 2 = Brackish 3 = Salt 4 = Coastal (unknown salinity, class 2 or 3)

Field 2 HD - Hydrometric Division

1 = 1CA 2 = 1CB 3 = 1CC 4 = 1CD 5 = 1CE

Field 3 WS - Watershed, actual value

Field 4 SS - Subwatershed, blank or actual value (1-16)

Field 5 WET - Wetland number, actual value

Map Information

Field 6 GRID - Military Grid Reference, actual value

Field 7 ZONE - UTM Zone of northeast corner of wetland

Field 8 EAST - UTM Easting of northeast corner of wetland

Field 9 NORTH - UTM Northing of northeast corner of wetland

Field 10 MAP - Topographical Map (1:50,000 NTS) Numeric Prefix, e.g. 21

Inventory Information

Field 11 PHOTO - Air photo number which provides information on the year, flight line and photo number of the air photo on which the wetland inventory was based.

Field 12 CHK - Was a field check done on the air photo interpretation?

0 = Not checked 1 = Aerial survey 2 = Ground Survey, May
3 = Ground Survey, June 4 = Ground Survey, July 5 = Ground Survey, Aug.
6 = Ground Survey, Sep. 7 = Ground Survey, Oct.

Field 13 YR - Year that inventory was completed

81 = 1981 82 = 1982

Wetland Description

Field 14 CLI - Canada Land Inventory suitability of habitat for waterfowl production.

1 = No limits to production 2 = Very slight limitations 3 = Slight limitations
4 = Moderate limitations 5 = Moderately severe limitations
6 = Severe limitations 7 = Almost no production

Field 15 CL1 - Subclass of vegetation found in wetland (value 1-28).
Field 16 CL2 - Subclass of vegetation found in wetland (value 1-28).
Field 17 CL3 - Subclass of vegetation found in wetland (value 1-28).
Field 18 CL4 - Subclass of vegetation found in wetland (value 1-28).
Field 19 CL5 - Subclass of vegetation found in wetland (value 1-28).
Field 20 CL6 - Subclass of vegetation found in wetland (value 1-28).
Field 21 CL7 - Subclass of vegetation found in wetland (value 1-28).
Field 22 CL8 - Subclass of vegetation found in wetland (value 1-28).
Field 23 CL9 - Subclass of vegetation found in wetland (value 1-28).
Field 24 CL10- Subclass of vegetation found in wetland (value 1-28).

Vegetative Subclasses found in wetlands:

Open Water (OW)	1 = Vegetated	2 = Non-vegetated	
Deep Marsh (DM)	3 = Dead Woody	4 = Shrub	5 = Sub-shrub
	6 = Robust	7 = Narrow-leaved	8 = Broad-leaved
Shallow Marsh (SM)	9 = Robust	10 = Narrow-leaved	11 = Broad-leaved
	12 = Floating-leaved		
Seasonally Flooded Flat (SFF)	13 = Emergent	14 = Shrubby	
Meadow (M)	15 = Grazed	16 = Ungrazed	
Shrub Swamp (SS)	17 = Slender	18 = Bushy	19 = Compact
Wooded Swamp (WS)	30 = Deciduous	31 = Evergreen	
Bog (B)	32 = Wooded	33 = Shrubby	34 = Open

Field 25 DOM - Dominant vegetation class

1 = Open Water (OW)	2 = Deep Marsh (DM)	3 = Shallow Marsh (SM)
4 = Seasonally Flooded Flat (SFF)	5 = Meadow (M)	6 = Shrub Swamp (SS)
7 = Wooded Swamp (WS)	8 = Bog (B)	

Field 26 SIZE - Size of wetland in hectares

Field 27 SCL - Size cass of wetland

1 = 0.25 - 2.0 ha	2 = 2.1 - 8.0 ha	3 = 8.1 - 20.0 ha
4 = 20.1 - 40.0 ha	5 = greater than or equal to 40.1 ha	

Landscape Information

Field 28 JUX - Juxtaposition of wetland

1) Hydrologically connected to other wetlands (different dominant vegetation class) or open water body within 1.6 km.
2) Hydrologically connected to other wetlands (same dominant vegetation class) within 0.4 km.
3) Wetland greater than 20.09 ha in size containing 3 or more wetland classes.
4) Hydrologically connected to other wetlands (different dominant vegetation class) or open water bodies from 1.6 - 5 km away.
5) Hydrologically connected to other wetlands (same dominant vegetation class) from 0.4 -0.8 km away.
6) Within 0.8 km of other wetlands (different dominant vegetation class) or open water bodies but not hydrologically connected.
7) No hydrologically connected wetland (same dominant vegetation class) within 1.6 km, or no other isolated wetlands (different dominant class) or open water body within 0.8 km.

Field 29 HAB - Surrounding habitat consists of the following land cover types:

1 = Forestland	2 = Agricultural or Open	3 = Salt Marsh	
4 = Classes 1 & 2	5 = Classes 1 & 3	6 = Classes 2 & 3	7 = Classes 1,2 & 3

Field 30 SITE - Site Type

1 = Upland, Isolated	2 = Upland, Streamside	3 = Upland, Lakeside
4 = Upland, Seaside	5 = Upland, Island	6 = Bottomland, Isolated
7 = Bottomland, Lakeside	8 = Bottomland, Streamside	9 = Bottomland Deltaic
10 = Bottomland, Seaside	11 = Bottomland, Island	

Field 31 IMPD - Presence and type of impoundment.

0 = No Impoundment 1 = Active Borrow Pit 2 = Active Man-made
3 = Active Beaver 4 = Inactive Borrow Pit 5 = Inactive Man-made
6 = Inactive Beaver

Limnological

Field 32 COND - Conductivity category of surface water (milli-mhos)

0 = Not checked 1 = greater than 150 2 = 51 - 150 3 = 0- 50

Field 33 - PH - pH category of surface water

0 = Not checked 1 = greater than 7.5 2 = 6.5 - 7.5 3 = 2 - 6.4

Vegetation

Field 34 COV - Describes the amount and distribution of emergent vegetation.
Cover occupies:
95% of wetland = 1
76-95% of wetland in peripheral band= 2
76-95% of wetland in dense patches or diffuse stands = 3
26-75% of wetland in peripheral band= 4
26-75% of wetland in dense patches or diffuse stands = 5
5-25% of wetland in peripheral band= 6
5-25% of wetland in dense patches or diffuse stands = 7
less than 5% of wetland = 8

Field 35 VI - Vegetative Interspersion

1 = Low 2 = Medium 3 = High

Ancillary Wetland Information

Field 36 GOLET - Golet Score is given, and ranges from (36 - 108)

Field 37 WDP - Potential to develop wetland as waterfowl impoundment

1 = Nil 2 = Low 3 = Moderate 4 = High

3. Description of NB and NS Coastal Inventory Databases

The format of these databases are the same for New Brunswick and Nova Scotia, although some information was not collected for both provinces.

Locational Information

Field 1 SHEDL - Watershed letter
Field 2 ISLAND - If on an island 'I' otherwise 'N'
Field 3 SHEDN - Watershed number
Field 4 SSHED - Subshed, blank or letters 'A' to 'Z'
Field 5 PROV - Province
Field 6 UNIT - Coastal unit number
Field 7 CO - County where the unit component is located.

The county codes for the province of New Brunswick are:

A = Albert	B = Carleton	C = Charlotte
G = Gloucester	J = Saint John	K = Kent
I = Kings	M= Madawaska	N = Northumberland
Q = Queens	R = Restigouche	S = Sunbury
V = Victoria	W= Westmorland	Y = York

The county codes for the province of Nova Scotia are:

A = Annapolis	B = Cape Breton	C = Colchester
D = Digby	E = Cumberland	F = Halifax
G = Guysborough	H = Hants	I = Inverness
K = Kings	L = Lunenburg	N = Antigonish
P = Pictou	Q = Queens	R = Richmond
S = Shelburne	V = Victoria	Y = Yarmouth

Field 8 TOPO - Topographical map (1:50,000 NTS) e.g., 21H16.

Geographic Information
Location of salt marshes, saline ponds, and islands is given (based on 1927 NAD).

Field 9 ZONE - UTM Zone
Field 10 EAST - UTM Easting
Field 11 NORTH - UTM Northing

Coastal Classification

Field 12 COMP - Unit Component, e.g., salt marsh,. estuarine flat, beach etc.

Salt Marsh - e.g. S1 0, S1 1, S1 2, S1 3
S2 0, S2 1, S2 2, S2 3

'S' indicates Salt Marsh. The first number indicates the ratio of high to low salt marsh, and the last digit indicates the number of salt marsh ponds per hectare.

S1 - indicates 20% low salt marsh, 80 % high salt marsh.
S2 - indicates 40% low salt marsh, 60 % high salt marsh.
S3 - indicates 60% low salt marsh, 40 % high salt marsh.
S4 - indicates 80% low salt marsh, 20 % high salt marsh:
S5 - indicates 100% low salt marsh, 0 % high salt marsh.

0 - indicates no saline ponds
1 - indicates less than 5 ponds per 10 ha.
2 - indicates 5 to 10 ponds per 10 ha.
3 - indicates greater than 1 pond per ha.

Estuarine Flats - e.g. E1F1, E1F1V, E1F1Z or E1F2, E1F2V, E1F2Z
E2F1, E2F1V, E2F1Z or E2F2, E2F2V, E2F2Z

'E' indicates estuarine flat. 'F' indicates the substrate type. 'V' and 'Z' indicate the presence of vegetation.

E1 = Subtidal E2 = Intertidal

F1 = Sand F2 = Sand-mud F3 = Organic Mud
F4 = Sand-rock F5 = Silt clay F6 = Rock
F7 = Reef

V = Vegetated Z= *Zostera marina* present

Beach - e.g. BM, BS, BR, BC

'B' indicates beach. The second letter indicates the substrate type, where 'M' indicates mud, 'S' indicates sand, 'R' indicates rock, and 'C' indicates cobble.

Dune - e.g. D, DV, D .

'D' indicates dune. The second letter indicates the type of vegetation present, where 'V' indicates

the presence of grasses and shrubs, and 'W' indicates the presence of trees.

Coastal Saline Pond - e.g., PO, PV, P1F1O, P1F1V, P2F7V.

'P' indicates a coastal saline pond.
P O = open pond with an undetermined bottom,
P V = vegetated pond with an undetermined bottom.
P1 = Subtidal P2 = Intertidal
F1 = Sand flat F2 = Sand-mud F3 = Mud
F4 = Sand rock F5 = Silt clay F6 = Rock F7 = Reef

V = Presence of vegetation Z= Presence of *Zostera marina*

Island - e.g., IW, IS, IG, IB.

'I' indicates an island. The second letter describes the vegetation, where 'W' indicates wooded, 'S' indicates shrub, 'G' indicates grass, and 'B' indicates barren.

Field 13 SIZE - Size of unit component in hectares.

Field 14 EXP - If unit component salt marsh, then this field contains information on the exposure of the site to wave action, where: 1 = Unprotected 2 = Protected

Field 15 HABITAT -

If unit component is salt marsh then this field contains information on the surrounding habitat, e.g., E2F2. If unit component is a saline pond then this field contains information on the subtype of saline pond e.g., P2F3V.

Field 16 UFLAG - Unit Flag. If unit component is salt marsh then:
Y = add value of surrounding habitat of individual salt marsh to unit score.
N = do not add value.

Field 17 DIS - If unit component is an island then:
1 = Inhabited, disturbed and accessible.
2 = Uninhabited, relatively undisturbed, accessible.
3 = Uninhabited, undisturbed, inaccessible.

Field 18 PLOV - Piping Plover Information Flag, where Y = Yes N = No.

Field 19 ACT - Island Activity Flag, where Y = Yes N = No.

4. Description of PEI Coastal Inventory Data Base

Locational Information

Field 1 HD - Hydrometric Division

1 = 1CA 2 = 1CB 3 = 1CC 4 = 1CD 5 = 1CE

Field 2 WS - Watershed, actual value

Field 3 SS - Subwatershed, blank or actual value (1-16)

Field 4 PROV - Province
Field 5 UNIT - Coastal Unit Number
Field 6 CO - County where the unit component is located.

The county codes for the province of Prince Edward Island are:

K = Kings P = Prince Q = Queens

Field 8 TOPO - Topographical map (1:50,000 NTS) e.g., 21H16.

Geographic Information

Location of salt marshes, saline ponds, and islands is given (based on 1927 NAD).

Field 9 ZONE - UTM Zone

Field 10 EAST - UTM Easting

Field 11 NORTH - UTM Northing

Coastal Classification

Field 12 COMP- Unit Component, e.g., salt marsh,. estuarine flat, beach etc.

Salt Marsh - e.g. S10, S11, S12, S13
S20, S21, S22, S23

'S' indicates Salt Marsh. The first number indicates the ratio of high to low salt marsh, and the last digit indicates the number of salt marsh ponds per hectare.

S1 - indicates 20% low salt marsh, 80 % high salt marsh.
S2 - indicates 40% low salt marsh, 60 % high salt marsh.
S3 - indicates 60% low salt marsh, 40 % high salt marsh.
S4 - indicates 80% low salt marsh, 20 % high salt marsh.
S5 - indicates 100% low salt marsh, 0 % high salt marsh.

0 - indicates no saline ponds
1 - indicates less than 5 ponds per 10 ha.
2 - indicates 5 to 10 ponds per 10 ha.
3 - indicates greater than 1 pond per ha.

Estuarine Flats - e.g. E1F1, E1F1V, E1F1Z or E1F2, E1F2V, E1F2Z
E2F1, E2F1V, E2F1Z or E2F2, E2F2V, E2F2Z

'E' indicates estuarine flat; 'F' indicates the substrate type; 'V' and 'Z' indicate the presence of vegetation.

E1 = Subtidal E2 = Intertidal

F1 = Sand F2 = Sand-mud F3 = Organic Mud
F4 = Sand-rock F5 = Silt clay F6 = Rock
F7 = Reef

V = Vegetated Z= *Zostera marina* present

Beach - e.g. BM, BS, BR, BC

'B' indicates beach. The second letter indicates the substrate type, where 'M' indicates mud, 'S' indicates sand, 'R' indicates rock, and 'C' indicates cobble.

Dune - e.g. D, DV, DW.

'D' indicates dune. The second letter indicates the type of vegetation present, where 'V' indicates the presence of grasses and shrubs, and 'W' indicates the presence of trees.

Coastal Saline Pond - e.g., PO, PV, P1F1O, P1F1V, P2F7V.

'P' indicates a coastal saline pond.

P O = open pond with an undetermined bottom,
P V = vegetated pond with an undetermined bottom.

P1 = Subtidal P2 = Intertidal
F1 = Sand flat F2 = Sand-mud F3 = Mud
F4 = Sand rock F5 = Silt clay F6 = Rock
F7 = Reef

V = Presence of vegetation Z= Presence of *Zostera marina*

Island - e.g., IW, IS, IG, IB.

'I' indicates an island. The second letter describes the vegetation, where 'W' indicates wooded, 'S' indicates shrub, 'G' indicates grass, and 'B' indicates barren.

Field 13 SIZE - Size of unit component in hectares.

Field 14 EXP - If unit component salt marsh, then this field contains information on the exposure of the site to wave action, where: 1 = Unprotected 2 = Protected

Field 15 HABITAT - If unit component is salt marsh then this field contains information on the surrounding habitat, e.g., E2F2. If unit component is a saline pond, then this field contains information on the subtype of saline pond e.g., P2F3V.

Field 16 UFLAG - Unit Flag. If unit component is salt marsh then:
Y = add value of surrounding habitat of individual salt marsh to unit score.
N = do not add value.

Field 17 DIS - If unit component is an island then:
1 = Relatively undisturbed.
2 = Disturbed.

Field 18 PLOV - Piping Plover Information Flag, where Y = Yes N = No.

Field 19 ACT- Island Activity Flag, where Y = Yes N = No.

Field 20 SCORES - Unit component and surrounding habitat scores

Field 21 ONLY - The score of the unit component only.

CHAPTER 4 - WETLAND RESOURCES OF THE MARITIMES

I. PHYSIOLOGICAL BACKGROUND

Freshwater wetlands and coastal habitats form major components of the landscape of the Maritime Provinces (Wells and Hirvonen 1988). The three maritime provinces have distinct physiographies and this in turn influences the type, distribution and number of freshwater wetlands and coastal habitat. Nova Scotia is comprised of a land area of 55,490 km^2 with 7,578 km of coastline. Nova Scotia has many lakes, over 400, but because the province is a peninsula, river systems are short. The longest rivers are the Mersey and St. Mary's, each approximately 116 km long. Nova Scotia is an elevated and eroded plain of Cretaceous origin (Roland and Smith 1969). This plain dips below the surface of the ocean to produce the drowned and irregular coastline with its numerous coves and islands. This plain rises gradually and evenly to the northward, to attain in the highlands of Cape Breton a height of 400 m. In general, much of Nova Scotia along the Atlantic Coast can be characterized as flat, sterile, and poorly drained (Roland 1982).

In contrast to Nova Scotia and Prince Edward Island, much of the terrain of New Brunswick can be characterized by rugged, well-drained topography. The north-central section of New Brunswick is a continuation of the Appalachian mountain chain, with many hills. The tallest of which are over 900 m above sea level. The eastern portion of New Brunswick, along the Northumberland Strait is characterized by generally flat terrain, with large tracts of poorly drained land (Rowe 1972). The total area of New Brunswick is 73,440 km^2 with 2,269 km of coastline. There are many long rivers in the province which drain large watersheds. The Saint John River for example is 673 km long and drains a watershed of 55,900 km^2.

Prince Edward Island is the smallest province in Canada, comprising only 5,660 km^2 and has a coastline of 1,107 km. The topography of PEI is undulating with low relief. Approximately 75 % of the island is below 50 m in elevation with the highest spot being only 150 m above sea level. The bedrock of PEI is sandstone. Due to iron compounds in the parent material, derived soils are deep red in colour. Glacial deposits and derived soils are of a loam to sandy loam texture and relatively fertile (Whiteside 1965). The island varies from 6.5 km wide just west of Summerside to 45 km wide at the Queens-Kings county line. All rivers are relatively short and shallow, with the exception of the Hillsborough, Dunk, York, and Mill. There are few lakes on PEI.

II. REGIONAL SUMMARY

This summary is based on wetlands inventory data for New Brunswick (1987), Prince Edward (1987) and Nova Scotia (1988). New Brunswick contains 56 % of the total wetland area of the Maritime Provinces, while Nova Scotia and PEI have 42 % and 3 % respectively (Table 5). In the Maritimes there are 555,340 ha of wetlands, with bogs encompassing 322,918 ha of that total. There are marked differences in the total area of different wetland types in the Maritimes. Wooded swamp is the rarest wetland type identified in the inventory with only 4,940 ha in the

Maritime Provinces, 80% of which occurs in New Brunswick. Prince Edward Island has a relatively high amount of the wetland area that is deep marsh or shallow marsh in the Maritimes.

New Brunswick and Nova Scotia each contain 48 % of the total number of wetlands in the Maritimes with PEI containing the remaining 4 % (Table 6). Most of the deep marsh and shallow marsh class of wetlands occur in New Brunswick, whereas Nova Scotia has 65% of the total number of bogs.

Nova Scotia with its long coastline contains 63 % of the total area of coastal habitat in the Maritime Provinces (Table 7). Estuarine flats comprise 335,600 ha, the largest proportion of this land area for any coastal habitat type. Island habitat is the next largest class of coastal habitat encompassing 49 361 ha, 90 % of which is in Nova Scotia. PEI contains a sizeable proportion (33 %) of the total area of dune habitat in the Maritimes.

Salt marshes are the most numerous coastal habitat type in the Maritime provinces with 3,269 identified in the inventory (Table 8). Although the length of coastline differs dramatically among the Maritime Provinces the number of salt marshes is relatively equally distributed. In contrast, isalnd habitat is found predominantly in Nova Scotia which contains 88 % of the 1,742 islands identified. Prince Edward Island has only 1 % of the total number of islands in the Maritimes.

Table 5 - Distribution of freshwater wetlands (area) in the Maritimes.

Provincial Percentage of Wetland Area				
Dominant Vegetative Class	Total Area (ha)	New Brunswick	Nova Scotia	Prince Edward Island
Open Water	59,971	69	26	5
Deep Marsh	18,340	68	22	10
Shallow Marsh	6,415	81	7	12
Flooded Flats	19,223	81	19	1
Meadow	26,294	54	43	2
Shrub Swamp	89,691	66	32	2
Wooded Swamp	4,899	81	11	8
Bog	320,454	48	50	2
Total	545,287	56	41	3

Table 6 - Distribution of freshwater wetlands (number) in the Maritimes.

Provincial Percentage of Total Number of Wetlands				
Dominant Vegetative Class	Total Number	New Brunswick	Nova Scotia	Prince Edward Island
Open Water	5,752	51	39	10
Deep Marsh	4,496	89	7	4
Shallow Marsh	2,212	85	4	11
Flooded Flats	207	87	12	1
Meadow	5,134	57	34	9
Shrub Swamp	17,640	58	40	2
Wooded Swamp	490	55	26	19
Bog	33,740	33	64	3
Total	69,671	48	48	4

Table 7 - Distribution of coastal habitat (area) in the Maritimes.

Provincial Percentage of Coastal Wetland Area				
Coastal Component	Total Area (ha)	New Brunswick	Nova Scotia	Prince Edward Island
Salt Marsh	25,762	33	48	19
Estuarine Flats	335,600	26	61	13
Saline Ponds	10,301	13	75	12
Dunes	10,567	24	43	33
Beaches	6,203	32	42	26
Islands	49,361	4	90	6
Total	437,796	24	63	13

Table 8 - Distribution of coastal habitat components (number) in the Maritimes.

Provincial Percentage of Total Number of Coastal Habitat Components				
Coastal Component	Total Number	New Brunswick	Nova Scotia	Prince Edward Island
Salt Marsh	3,278	37	35	28
Estuarine Flats	1,111	39	40	21
Saline Ponds	659	24	60	16
Dunes	831	41	35	24
Beaches	1,271	50	35	15
Islands	1,742	11	88	1
Total	8,892	33	48	19

1. New Brunswick Provincial Summary

Bogs are the most numerous class of wetland in New Brunswick, and occupy 153,993 ha (Table 9). A summary of coastal habitat is provided in Table 10. Although New Brunswick has only 181 seasonally flooded flats, the least numerous of all wetland classes, they constitute 155,530 ha of wetland habitat. Shrub swamps are the second most numerous class of wetlands in New Brunswick with there being 10,180 identified in the inventory. Shrb swamps occupy a large proportion of the total wetland area of the province. Wooded swamps are neither numerous nor cover a large wetland area in New Brunswick. The distribution of wetlands in New Brunswick is summarized by county in Table 11. Seasonally flooded flats are most abundant in Northumberland County (Miramichi River system), whereas wooded swamps are most abundant in Queens County (Saint John River system).

The most numerous type of coastal habitat in New Brunswick is salt marsh (n= 1,197), whereas saline ponds are the least numerous (n= 160; Table 12). Estuarine flats constitute the most area of any coastal habitat type, over 86,564 ha, whereas saline ponds cover the smallest area, only 1,357 ha. Only eight counties in New Brunswick occur along the coast (Table 12). Gloucester County contains much of the coastal habitat of New Brunswick, having the highest number of salt marshes, estuarine flats, saline ponds, and dunes of any county in the province. The archipelagos associated with Passamaquoddy Bay give Victoria county and the highest number and area of islands of any county in the province.

Table 9 - New Brunswick freshwater wetlands provincial summary.

Dominant Vegetative Class	Number of Wetlands	Area (ha)
Open Water	2,944	41,362
Deep Marsh	3,991	12,546
Shallow Marsh	1,875	5,214
Seasonally Flooded Flats	181	15,530
Meadow	2,911	14,325
Shrub Swamp	10,180	59,256
Wooded Swamp	272	3,956
Bog	10,997	153,993
Total	33,351	306,195

Table 10 - New Brunswick coastal habitat provincial summary.

Coastal Component	Number	Area (ha)
Salt Marsh	1,199	8,474
Estuarine Flats	433	86,564
Saline Ponds	160	1,357
Dunes	340	2,519
Beaches	636	1,954
Islands	184	2,241
Total	2,952	103,109

Table 11 - County summary of number and total area (hectares) of freshwater wetlands in New Brunswick.

	Open Water		Deep Marsh		Shallow Marsh		Seasonally Flooded Flats		Meadow		Shrub Swamp		Wooded Swamp		Bog	
County	No.	Area ha	No.	Area ha	No.	Area ha	No.	Area ha	No.	Area ha	No.	Area	No.	Area	No.	Area ha
Albert	50	450	84	633	200	275	4	32	104	427	121	402	16	62	141	669
Carleton	144	375	226	1,683	54	288	13	393	102	285	498	2,292	8	18	140	2,136
Charlotte	292	5,217	235	626	2	4	8	300	153	662	1053	6,934	2	18	848	9,473
Gloucester	175	375	187	479	1	9	9	454	111	453	701	6,017	4	140	899	20,986
Kent	78	221	289	778	166	442	7	23	146	1,277	524	3,415	14	169	1627	23,295
Kings	152	1,460	176	826	195	167	13	2,117	170	1,112	387	1,723	4	18	164	1,211
Madawaska	119	1,320	112	138	25	52	9	148	40	182	286	1,284	5	19	47	155
Northum-berland	455	4,842	744	1,147	23	38	68	1,529	258	583	2292	13,282	12	388	2864	38,453
Queens	82	1,239	198	561	367	1,751	5	2,193	225	1,423	352	2,179	40	538	884	4,747
Resti-gouche	316	1,219	884	1,309	9	11	19	226	207	385	1355	7,497	0	0	106	504
Saint John	164	2,578	44	337	0	0	1	121	34	80	238	915	0	0	609	3,740
Sunbury	79	902	62	143	107	344	12	7,469	201	1,684	263	1,624	7	42	620	20,926
York	564	16,181	249	573	149	376	7	287	619	3,165	1123	7,090	86	1,511	1036	14,429
Victoria	229	4,024	342	525	162	254	5	167	312	873	681	3,047	5	24	403	1,874
Westmor-land	45	961	159	2,789	415	1,205	1	72	229	1,735	306	1,555	69	1,012	609	10,764
Total	2944	41,362	3991	12,546	1875	5,214	181	15,530	2911	14,325	10180	59,256	272	3,956	10997	153,993

Table 12 - County summary of number and total area (hectares) of coastal habitat in New Brunswick.

	Salt Marsh		Estuarine Flats		Saline Ponds		Dunes		Beaches		Islands	
County	Number	Hectares	Number	Hectares	Number	Hectares	Number	Hectares	Number	Hectares	Number	Hectares
Albert	118	1,736.6	8	5,799.3	2	15.5	9	19.5	17	59.6	3	56.2
Charlotte	48	146.9	38	7,959.2	15	68.1	52	53.8	227	285.1	141	1,263.9
Gloucester	335	2,816.1	152	12,570.1	70	905.4	128	1,150.0	114	596.6	17	52.7
Kent	267	624.1	89	12,378.4	41	202.3	46	828.9	66	473.8	3	416.2
Northumberland	143	500.2	46	34,883.3	19	57.7	44	317.1	63	150.3	3	142.2
Restigouche	4	11.1	17	293.4	3	9.7	1	4.0	22	60.8	5	5.4
Saint John	60	606.7	40	4,193.0	1	10.7	14	32.2	74	138.9	11	29.1
Westmorland	222	2,028.0	43	8,487.3	9	87.8	46	113.0	53	189.2	1	275.0
Total:	1,197	8,469.7	433	86,564.0	160	1,357.2	340	2,518.5	636	1,954.3	184	2,240.7

2. Nova Scotia Provincial Summary

Bogs are the most numerous and extensive wetlands in Nova Scotia with 21,988 bogs comprising 161,094 ha (Table 13). A summary of coastal habitat is provided in Table 14. Shrub Swamp is the second most numerous and extensive class of wetlands in Nova Scotia, with 7,011 shrub swamps totalling 29,383 ha. Nova Scotia has 124 seasonally flooded flats but they are not extensive in nature, comprising only 5,508 ha in total. Wooded swamps are neither numerous nor cover a large area in Nova Scotia. Halifax county has the most wetlands of any county in Nova Scotia although other counties contain more wetland area (Table 15). Deep Marsh, shallow marsh, flooded flats, and wooded swamps, show a very uneven distribution in the province. These classes of wetlands have a low frequency of occurrence or do not occur at all in some counties.

The most numerous type of coastal habitat in Nova Scotia is island habitat with 1,532 islands comprising 44,215 ha (Table 14). Dune habitat has the lowest frequency of occurrence of coastal habitat, with 291 sites comprising 4,545 ha (Table 16). Beach habitat has the lowest total area of any coastal habitat type, with 448 beaches comprising 2,632 ha. Estuarine flats constitute the most area of any coastal habitat type, over 205,488 ha. All eighteen counties in Nova Scotia contain coastal habitat. Halifax county contains the most islands (n= 514) islands, whereas Guysborough county contains the largest total area of island habitat (11,823 ha).

Table 13 - Nova Scotia freshwater wetlands provincial summary.

Dominant Vegetative Class	Number of Wetlands	Area (ha)
Open Water	2,255	15,809
Deep Marsh	329	4,048
Shallow Marsh	98	423
Seasonally Flooded Flats	24	3,586
Meadow	1,774	11,410
Shrub Swamp	7,030	28,982
Wooded Swamp	125	542
Bog	21,693	158,630
Total	33,328	223,427

Table 14 - Nova Scotia coastal habitat provincial summary.

Coastal Component	Number	Area (ha)
Salt Marsh	1,166	12,442
Estuarine Flats	444	205,488
Saline Ponds	393	7,685
Dunes	291	4,545
Beaches	448	2,632
Islands	1,532	44,215
Total	4,274	277,007

Table 15 - County summary of number and total area (hectares) of freshwater wetlands in Nova Scotia.

	Open Water		Deep Marsh		Shallow Marsh		Seasonally Flooded Flat		Meadow		Shrub Swamp		Wooded Swamp		Bog	
County	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area
Annapolis	61	547	5	46	7	104	0	0	92	543	507	2,512	3	23	833	7,635
Antigonish	102	115	9	46	3	21	0	0	22	240	190	558	5	5	38	259
Cape Breton	195	3,200	10	41	0	0	0	0	17	90	144	1,233	4	6	1717	9,933
Colchester	95	447	33	231	3	13	6	2,534	260	819	844	2,205	5	13	553	2,403
Cumberland	53	212	92	1,729	27	173	3	156	266	849	952	3,635	15	127	652	8,081
Digby	120	1,915	6	58	1	0	0	0	106	938	348	1,964	4	42	479	6,129
Guysborough	76	827	8	259	4	43	3	284	30	165	344	1,311	0	0	2733	15,903
Halifax	370	1,424	35	482	37	49	10	146	63	825	469	2,196	3	7	4896	16,484
Hants	55	211	38	369	3	6	0	0	171	1,584	326	1,382	17	125	829	6,693
Inverness	130	605	7	99	2	1	1	215	38	173	51	658	0	0	739	7,509
Kings	96	207	19	146	0	0	1	251	118	1,253	329	1,689	2	10	186	2,526
Lunenburg	96	242	5	37	1	1	0	0	124	756	1025	4,050	51	128	1312	8,518
Pictou	153	262	21	214	0	0	0	0	90	575	406	932	2	2	726	2,565
Queens	80	320	9	61	0	0	0	0	93	383	483	1,700	9	43	1601	23,192
Richmond	69	1,252	5	128	0	0	0	0	40	165	81	239	0	0	1535	5,907
Shelburne	19	101	9	49	3	5	0	0	129	708	164	917	4	9	1243	21,148
Victoria	419	3,130	3	7	0	0	0	0	6	122	48	176	1	1	952	3,807
Yarmouth	66	793	15	49	7	7	0	0	109	1,221	319	1,625	0	0	669	9,939
Total	2255	15,809	329	4,048	98	423	24	3,586	1774	11,409	7030	28,982	125	542	21693	158,630

Table 16 - County summary of number and total area (hectares) of coastal habitat in Nova Scotia.

	Salt Marsh		Estuarine Flats		Saline Ponds		Dunes		Beaches		Islands	
County	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)	Number	Area (ha)
Annapolis	28	225	11	10,647	1	5	2	5	0	0	2	43
Antigonish	52	288	21	6,202	34	452	10	484	15	186	51	1,091
Cape Breton	56	281	58	110,584	102	2,388	36	191	73	202	116	2,757
Colchester	111	1,186	19	3,095	1	20	3	11	18	107	8	111
Cumberland	226	2,485	51	8,638	4	28	26	62	49	247	14	254
Digby	73	649	23	11,851	18	112	21	66	37	163	8	4,511
Guysborough	44	157	58	10,654	56	600	25	125	49	437	284	11,823
Halifax	119	881	105	13,293	31	564	32	2,661	47	507	514	7,714
Hants	100	1,571	4	7,724	0	0	0	0	0	0	1	11
Inverness	63	361	55	107,138	107	1,093	31	142	65	163	83	1,610
Kings	75	1,432	9	7,327	0	0	2	24	2	27	2	12
Lunenburg	53	259	28	4,517	8	74	17	50	58	240	240	4,123
Pictou	45	316	20	8,603	22	156	9	141	7	128	15	2,367
Queens	60	263	13	5,157	19	399	18	108	34	166	58	599
Richmond	75	306	61	107,062	134	2,340	49	316	64	173	157	10,324
Shelburne	147	1,260	32	13,579	30	640	37	308	43	207	157	5,448
Victoria	55	242	62	111,369	104	1,884	36	112	63	165	94	1,800
Yarmouth	140	3,220	16	9,741	27	242	16	24	24	53	193	4,504
Total:	1,159	12,423	444	205,488	393	7,685	291	4,545	448	2,632	1532	44,215

3. Prince Edward Island Provincial Summary

Bogs are the most numerous class of wetland in PEI with 1,050 bogs comprising 15,675 ha (Table 17). A summary of coastal habitat is provided in Table 18. Bogs constitute 35 % of the total number and 50 % of the total wetland area of PEI. The rarest class of freshwater wetland is seasonally flooded flats with only two in the province, 11 and 96 ha in size respectively. A large proportion of the wetland area of PEI consists of the open water and deep marsh wetland classes. Wetland habitat is relatively evenly distributed among the five hydrometric divisions (Table 19).

The most numerous type of coastal habitat in PEI is salt marsh with 913 salt marshes occurring in the province (Table 18). Islands are the least numerous type of coastal habitat in PEI , with a total of 26 islands. Estuarine flats constitute the largest total area of coastal habitat with 234 flats comprising 43,548 ha. Saline Ponds occupy the least area, only 1,259 ha. Prince Edward Island was divided into eighteen coastal units (Table 20). Coastal habitat varies greatly among coastal units. Hillsborough and Malpeque coastal units have a large proportion of the total number and total area of salt marsh in PEI. Most of PEI's island habitat occurs in the Malpeque and Cascumpec coastal units. PEI is renowned for its dune and beach habitat. The majority of dune habitat occurs in the Crowbush coastal unit with over 1,445 ha of dune habitat. The Malpeque area has 640 ha of dunes.

Table 17 - Prince Edward Island freshwater wetlands provincial summary.

Dominant Vegetative Class	Number of Wetlands	Area (ha)
Open Water	553	2,800
Deep Marsh	176	1,746
Shallow Marsh	239	778
Seasonally Flooded Flats	2	107
Meadow	449	559
Shrub Swamp	430	1,453
Wooded Swamp Bog	93	401
Bog	1,050	7,831
Total	2,992	15,675

Table 18 - Prince Edward Island coastal habitat provincial summary

Coastal Component	Number	Area (ha)
Salt Marsh	913	4,846
Estuarine Flats	234	43,548
Saline Ponds	106	1,259
Dunes	200	3,504
Beaches	187	1,617
Islands	26	2,906
Total	1,166	57,680

Table 19 - Number and total area (hectares) of wetlands per hydrometric unit in Prince Edward Island.

	Open Water		Deep Marsh		Shallow Marsh		Flooded Flats		Meadow		Shrub Swamp		Wooded Swamp		Bog	
Hydrometric Division	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)	No.	Area (ha)
1	127	309	50	94	50	180	1	11	49	66	109	280	14	41	276	3,312
2	118	543	19	12	50	143	0	0	94	89	63	148	7	9	75	580
3	147	1,207	25	185	47	188	0	0	158	168	87	445	23	56	223	1,019
4	44	265	53	1,261	31	87	1	96	44	100	64	408	23	226	175	1,502
5	117	477	29	193	61	180	0	0	104	134	107	173	26	69	301	1,418
Total	553	2,800	176	1,746	239	778	2	107	449	559	430	1,453	93	401	1050	7,831

Table 20- Coastal unit summary of number and total area (hectares) of coastal habitat in Prince Edward Island.

	Salt Marsh		Estuarine Flats		Saline Ponds		Dunes		Beaches		Islands	
Coastal Unit	Number	Hectares	Number	Hectares	Number	Hectares	Number	Hectares	Number	Hectares	Number	Hectares
Borden	45	234	5	165	1	3	6	12	7	52	0	0
Summerside	32	283	6	921	1	1	3	3	6	41	1	39
Egmont	60	380	27	2,649	4	16	13	119	15	87	1	1
North Shore	5	15	0	0	7	107	6	23	9	37	0	0
Tignish	11	80	0	0	3	143	7	26	1	25	0	0
Cascumpec	57	245	10	5,219	6	20	8	259	8	123	7	209
Malpeque	147	697	52	7,600	23	76	30	640	30	266	9	2,190
New London Bay	31	95	22	1,180	7	34	10	86	11	110	0	0
PEI Natl Park	37	169	15	2,552	1	2	11	356	8	213	0	0
Crowbush	47	206	18	3,786	10	149	29	1,445	12	384	0	0
East Point	20	58	0	0	11	328	16	352	12	76	0	0
Boughton	51	127	21	689	10	268	12	65	10	39	0	0
Cardigan Bay	36	95	11	6,016	5	4	17	58	15	36	1	200
Murray Harbour	20	46	5	1,870	6	14	9	23	8	26	3	45
Wood Island	38	243	7	368	7	90	13	26	16	60	0	0
Hillsborough Bay	97	685	10	4,017	1	4	4	6	2	2	2	34
Hillsborough	138	968	20	6,306	1	1	1	1	5	5	1	2
St. Peters Island	41	222	5	212	2	2	5	4	12	35	1	187
Total	913	4,846	234	43,548	106	1,259	200	3,504	187	1,617	26	2,906

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