

***NOMINATION AND LISTING OF WETLANDS OF
INTERNATIONAL IMPORTANCE IN
CANADA***

Procedures Manual

***Revised Edition
November 1999***

Compiled by C.D.A. Rubec

**Wildlife Conservation Branch
Canadian Wildlife Service
Environment Canada**

First Edition February 1994
Revised Edition November 1999

This document, *Nomination and Listing of Wetlands of International Importance in Canada: Procedures Manual* has been produced as one of a series of Canadian Ramsar Network Reports. These documents provide information and general guidance to Ramsar site managers and decision makers involved in the implementation of the Ramsar Convention within Canadian jurisdictions. This report is designed to be updated on a periodic basis as new Ramsar site nomination or designation criteria and procedures are adopted by the Contracting Parties to the Convention on Wetlands of International Importance.

Copies of this Report are available from:

Wildlife Conservation Branch
Canadian Wildlife Service
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Ottawa, Ontario
K1A 0H3

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NOMINATION AND LISTING OF WETLANDS OF INTERNATIONAL IMPORTANCE IN CANADA

SUMMARY

This *Procedures Manual* provides guidelines for the nomination of sites in Canada to the *List of Wetlands of International Importance* (the "List"). This action is taken in accordance with the articles of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the Ramsar Convention) to which Canada is a full party. These guidelines are needed to: (1) assure that nominations for listing of sites in Canada are consistent with Convention criteria and obligations; and, (2) allow mechanisms for appropriate review of proposed site nominations.

EFFECTIVE DATE

These guidelines became effective November 1, 1993 and are updated November 1, 1999.

FOR FURTHER INFORMATION CONTACT

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BACKGROUND ON THE RAMSAR CONVENTION

The Convention on Wetlands of International Importance Especially as Waterfowl Habitat (the "Convention"); was concluded in Ramsar, Iran, February 1, 1971. A Protocol to the Convention was concluded in Paris on December 3, 1982. The Convention was signed by Canada on January 5, 1981.

To date, 36 Ramsar sites have been nominated in Canada and have been accepted by the Conference of the Contracting Parties, as described in the publication *Wetlands for the World: Canada's Ramsar Sites* (Gillespie *et al.* 1991) and the publication *Canada and the Ramsar Convention* (Environment Canada 1999). Since 1981, nominations in Canada have been developed in close coordination with provincial or territorial governments wherein the proposed sites are located. Guidelines adopted by the Convention for interpreting listing criteria are used by those agencies proposing sites for the *List*.

One aspect of the Convention is its requirement that Contracting Parties identify wetlands of international importance and list them under the auspices of the Convention. The listing serves to highlight the values of these sites but affects neither the management regime for these areas nor resource use within them. Contracting Parties to the Convention are to formulate and implement their planning, promote the conservation of the wetlands included in the *List*, and as far as possible, promote the wise use of wetlands in their territory.

Contracting Parties to the Convention are also obliged to maintain the ecological character of those wetland areas included in the *List*. If changes in the ecological character resulting from technological developments, pollution or other human interference occur, the Contracting Party is to forward notification to all Contracting Parties and arrange for these matters to be discussed at

the next Conference.

Countries joining the Convention are required to list at least one wetland of international importance based upon Criteria established by the Convention. These Criteria were most recently amended in 1999 and approved by the Seventh Meeting of the Conference of the Contracting Parties to the Convention. The *Criteria and Ramsar Classification System for Wetland Types* currently in effect are outlined in Appendix 1.

At the Fifth Meeting of the Conference of the Contracting Parties in 1993, the Convention further resolved that initial nomination documents should include a site map and completed *Information Sheet on Ramsar Wetlands* with particular emphasis on conservation measures, wetland functions and values, and criteria used for the nomination (see Appendix 1). Criteria for the Wetlands of International Importance were expanded to include fish habitat in 1996 and all criteria were regrouped in 1999.

CANADIAN WILDLIFE SERVICE POLICY STATEMENT

PURPOSE

The purpose of this *Procedures Manual* is to establish Canadian Wildlife Service policy, guidelines and procedures for nominating sites to the *List of Wetlands of International Importance* within Canada. It provides supplemental guidance for determining site eligibility.

AUTHORITY

The authority for the establishment of these guidelines flows from the Government of Canada ratification of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat, which is deemed to be self-implementing.

SCOPE

This *Procedures Manual* is limited to the evaluation of proposed sites for nomination to the *List of Wetlands of International Importance*. It is not intended for any other use.

POLICY OF THE CANADIAN WILDLIFE SERVICE ON WETLANDS OF INTERNATIONAL IMPORTANCE

The Canadian Wildlife Service (the "Service") reaffirms its policy to promote proposed sites only if there is concurrence from the province or territory wherein the site(s) is (are) located; and the Service agrees that inclusion of non-binding guidelines for interpreting listing criteria will help persons or organizations proposing additional sites for the *List*.

The Service's commitment to wetland conservation is addressed in a number of documents including *The Federal Policy on Wetland Conservation* (Government of Canada 1991), and the *Wildlife Policy for Canada* (Government of Canada 1990). *Guidelines on Wetlands of International Importance* were developed by the Conference of the Parties to ensure compliance with the 1982 Paris Protocol and the articles of the Convention on Wetlands of International Importance Especially as Waterfowl Habitat. In reviewing sites eligible for

inclusion to the *List*, the policy of the Service is to support for nomination only those sites where:

- (1) lands and/or waters are in public or private management that is conducive to the conservation of wetlands;
- (2) maintenance of the ecological, hydrological and social/economic characteristics and functions of the site(s) can be assured; and,
- (3) there is concurrence from the province or territory and all landowners where the site(s) is(are) located.

GUIDELINES FOR SITE NOMINATION

In order to solicit appropriate nominations to the *List of Wetlands of International Importance*, the Service provides guidance on such nominations below.

Nominations can be made only by the appropriate administrative authority(ies) for a site. Such nominations shall be forwarded to the Office of the Director General, Canadian Wildlife Service, Ottawa. For the purpose of nominating sites, the appropriate administrative authority(ies) is defined as the party(ies) holding title to the land or water area. This may include federal, provincial, territorial, private, corporate or other non-government authorities. Nominations must have the endorsement and/or concurrence from the government of the province or territory on which the site is located.

INFORMATION SHEET

Supporting information in the form of a completed *Information Sheet on Ramsar Wetlands* for each proposed site is required. The *Information Sheet* is the specific form approved by the Fourth Conference of the Contracting Parties to the Convention at Montreux, Switzerland in June 1990 and subsequently revised on several occasions. Copies are available from the Ramsar Convention Secretariat in Switzerland (<http://www.ramsar.org>). Site nominations should include the description and information as presented below:

- **Nominating Authority:** Include name, address and other pertinent information on the administrative authority(ies) submitting the site nomination.
- **Geographical Location:** Details such as latitude and longitude coordinates, and nearby features, settlements, and other identifying characteristics should be provided. Include up-to-date detailed maps (at the most detailed map scale reasonably available) of both the site and the surrounding areas if they are available.
- **Area:** Identify the total area of the proposed site in hectares including information on terrestrial and aquatic components.
- **Wetland Type:** A description of the kind of wetland is required. Appendix 2 provides a description of wetland types that should be used.
- **Site Description:** Include both a physical and a biological description of the site. The physical description includes details of geomorphology, hydrology and climate, while the biological description includes a brief review of habitat types, with lists of both typical and noteworthy fauna and flora.
- **Tenure/Ownership:** Identify the ownership of the land and water areas included in the site in terms of level of government or private holdings.
- **Degree of Protection:** Note any provincial, territorial, local, national or international recognition or designation afforded to the site. Indicate if any activities are controlled or

prohibited.

- **Management Practices:** Note management practices and traditional activities that take place.
- **Changes in Ecological Character:** Give a brief synopsis of the natural history of the area and note any land use changes or impacts to the ecological functions or character of the area.
- **Scientific Research and Facilities:** Highlight research underway or facilities provided (if any) for research interests.
- **Bibliographic References:** Note any key publications, reports, or documents used to compile the information presented. This is not intended to be a complete reference list.
- **Criteria for Inclusion:** Specify the criteria as listed by the Conference of the Contracting Parties that qualify the site as a Wetland of International Importance. Highlight those factors for the site that are considered to be of particular importance.
- **Map:** Include a detailed map of the boundaries of the site being nominated.
- **Letters of Support:** The nomination should include letters of support from the provincial government, local municipalities, non-government organizations, the landowner, and other supporting partner organizations as appropriate, to the individual circumstances of the site.

The Service will coordinate and facilitate review of nominations for site(s) for inclusion to the *List* with appropriate provincial, territorial, federal and non-government organizations. It is not the intention of the Service to maintain a standing "shadow list" of sites for possible future nomination, but rather to solicit prospective sites from federal, provincial and territorial agencies, private organizations, and the scientific community via the procedures described above. Once reviewed, those nominations that adhere to the criteria and policy set forth above will be formally presented to the Ramsar Convention Bureau in Switzerland. The Director General of the Canadian Wildlife Service will forward these nominations to the Bureau through the office of the Minister of Environment for Canada who must approve each nomination.

Acceptance or rejection of nominated sites is the responsibility of the Ramsar Bureau as delegated by the Conference of the Contracting Parties. Action taken by the Ramsar Convention Bureau on behalf of the Conference of the Contracting Parties will be transmitted to the appropriate Canadian management authority(ies).

CANADIAN RAMSAR NETWORK

The Canadian Wildlife Service, with the assistance of the Secretariat to the North American Wetlands Conservation Council (Canada), facilitates an informal distribution system for Ramsar communications in Canada. This is called the **Canadian Ramsar Network**. It focuses on coordination of advice and distribution of publications (such as the *Ramsar Newsletter* produced by the Ramsar Bureau in Switzerland) and information concerning implementation of the Ramsar Convention program within Canada. Contact personnel representing the management authorities for existing and new Ramsar sites in Canada and individuals or agencies with an active interest in the Ramsar program in Canada are added to this network upon their request.

REFERENCES

Gillespie, D.I., H. Boyd and P. Logan. 1991. *Wetlands for the Planet : Canada's Ramsar Sites*. Canadian Wildlife Service, Environment Canada. Ottawa, Ontario.

Environment Canada. 1999. *Canada and the Ramsar Convention. 1999 Edition*. Canadian Wildlife Service, Environment Canada. Ottawa, Ontario.

Government of Canada. 1991. *The Federal Policy on Wetland Conservation*. Environment Canada. Ottawa, Ontario.

Government of Canada. 1990. *A Wildlife Policy for Canada*. Environment Canada. Ottawa, Ontario.

Appendix 1: Criteria and Long-term Targets for the Designation of Wetlands of International Importance with Guidance for their Application

Criteria for designating Ramsar sites are presented, along with the long-term target the Convention has for each. For each Criterion, "Guidelines" and "Priorities" are also provided to assist Contracting Parties in taking a systematic approach to identifying sites for designation.

Group A of the Criteria: Sites Containing Representative, Rare or Unique Wetland Types

Criterion 1: A wetland should be considered internationally important if it contains a representative, rare or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.

Long-term Target for the Ramsar List: To have included in the Ramsar List at least one suitable representative of each wetland type, according to the *Ramsar Classification System for Wetland Types*, which is found within each biogeographic region.

Guidelines: In applying this Criterion systematically, Contracting Parties are encouraged to:

- i. determine biogeographic regions within their territory or at the supranational/ regional level;
- ii. within each biogeographic region, determine the range of wetland types present (using the *Ramsar Classification System for Wetland Type*, Appendix 2), noting in particular any rare or unique wetland types; and
- iii. for each wetland type within each biogeographic region, identify for designation under the Convention those sites that provide the best examples.

Priority should be given to those wetlands that play a substantial hydrological, biological or ecological role in the natural functioning of a major river basin or coastal system. In terms of hydrological functioning, the following is provided to assist Contracting Parties consider this aspect of determining priority sites under this Criterion. For guidance relevant to biological and ecological roles refer to Criterion 2 that follows below.

Wetlands can be selected for their hydrological importance which may include the following attributes. They may:

- i. play a major role in the natural control, amelioration or prevention of flooding;
- ii. be important for seasonal water retention for wetlands or other areas of conservation importance downstream;
- iii. be important for the recharge of aquifers;
- iv. form part of karst or underground hydrological or spring systems that supply major surface wetlands;
- v. be major natural floodplain systems;
- vi. have a major hydrological influence in the context of at least regional climate regulation or stability (e.g., certain areas of cloudforest or rainforest, wetlands or wetland complexes in semi-arid, arid or desert areas, tundra or peatland systems acting as sinks for carbon, etc.);
- vii. have a major role in maintaining high water quality standards.

Group B of the Criteria: Sites of International Importance for Conserving Biological Diversity - Criteria Based on Species and Ecological Communities.

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Long-term Target for the Ramsar List: To have included in the Ramsar List those wetlands that are believed to be of importance for the survival of vulnerable, endangered or critically endangered species or threatened ecological communities.

Guidelines: Ramsar sites have an important role in the conservation of globally threatened species and ecological communities. Notwithstanding the small numbers of individuals that may be involved, or poor quality of quantitative data or information that may sometimes be available, particular consideration should be given to listing wetlands that support globally threatened species at any stage of their life cycle using Criterion 2 or 3.

Contracting Parties strive seek to include in the Ramsar List wetlands that contain threatened ecological communities or are critical to the survival of species identified as vulnerable, endangered or critically endangered under national endangered species legislation/programs or within international frameworks such as the IUCN Red List or the Appendices of Convention on International Trade in Endangered Species of Plants and Animals (CITES) and Convention on Migratory Species (CMS).

When Contracting Parties are reviewing candidate sites for listing under this Criterion, greatest conservation value will be achieved through the selection of a network of sites providing habitat for rare, vulnerable, endangered, or critically endangered species. Ideally, the sites in the network will have the following characteristics. They:

- i. support a mobile population of a species at different stages of its life cycle; and/or
- ii. support a population of a species along a migratory pathway or flyway – noting that different species have different migratory strategies with different maximum distances needed between staging areas; and/or are ecologically linked in other ways, such as through providing refuge areas to populations during adverse conditions; and/or
- iii. are adjacent to or in close proximity to other wetlands included in the Ramsar List, the conservation of which enhances the viability of threatened species' population by increasing the size of habitat that is protected; and/or
- iv. hold a high proportion of the population of a dispersed sedentary species that occupies a restricted habitat type.

For identifying threatened ecological communities, greatest conservation value will be achieved through the selection of sites that have the following characteristics. They:

- i. include significant areas having certain communities, particularly where these are of high quality or particularly typical of the biogeographic region; and/or
- ii. are sites that have rare communities; and/or
- iii. include ecotones, seral stages and communities which exemplify particular processes; and/or
- iv. have communities that can no longer develop under contemporary conditions (because of climate change or anthropogenic interference for example); and/or

- v. have communities at the contemporary stage of a long developmental history and which support a well-preserved paleoenvironmental archive; and/or
- vi. are sites that have communities that are functionally critical to the survival of other (perhaps rarer) communities or particular species; and/or
- vii. contain communities which have been the subject of significant decline in extent or occurrence.

Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.

Long-term Target for the Ramsar List: To have included in the Ramsar List those wetlands that are believed to be of importance for maintaining the biological diversity within each biogeographic region.

Guidelines: When Contracting Parties are reviewing candidate sites for listing under this criterion, greatest conservation value will be achieved through the selection of a suite of sites that have the following characteristics. They:

- i. are "hotspots" of biological diversity and are evidently species-rich even though the number of species present may not be accurately known; and/or
- ii. are centres of endemism or otherwise contain significant numbers of endemic species; and/or
- iii. contain the range of biological diversity (including habitat types) occurring in a region; and/or
- iv. contain a significant proportion of species adapted to special environmental conditions (such as temporary wetlands in semi-arid or arid areas); and/or
- v. support particular elements of biological diversity that are rare or particularly characteristic of the biogeographic region.

Criterion 4: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Long-term Target for the Ramsar List: To have included in the Ramsar List those wetlands that are the most important for providing habitat for plant or animal species during critical stages of their life cycle and/or when adverse conditions prevail.

Guidelines: Critical sites for mobile or migratory species are those which contain particularly high proportions of populations gathered in relatively small areas at particular stages of life cycles. This may be at particular times of the year or, in semi-arid or arid areas, during years with a particular rainfall pattern. For example, many waterbirds use relatively small areas as key staging points (to eat and rest) on their long-distance migrations between breeding and non-breeding areas. For *Anatidae* species, moulting sites are also critical. Sites in semi-arid or arid areas may hold very important concentrations of waterbirds and other mobile wetland species and be crucial to the survival of populations, yet may vary greatly in apparent importance from year-to-year as a consequence of considerable variability in rainfall patterns.

Non-migratory wetland species are unable to move away when climatic or other conditions become unfavourable and only some sites may feature the special ecological characteristics to

sustain species' populations in the medium or long-term. Thus, in dry periods some crocodile and fish species retreat to deeper areas or pools within wetland complexes, as the extent of suitable aquatic habitat diminishes. These restricted areas are critical for the survival of animals at that site until rains come and increase the extent of wetland habitat once more. Sites (often with complex ecological, geomorphological and physical structures) that perform such functions for non-migratory species are especially important for the persistence of populations and should be considered as priority candidates for listing.

Specific criteria based on waterbirds

Criterion 5: A wetland should be considered internationally important if it regularly supports 20 000 or more waterbirds.

Long-term Target for the Ramsar List: To have included in the Ramsar List all wetlands which regularly support 20 000 or more waterbirds.

Guidelines: When Contracting Parties are reviewing candidate sites for listing under this Criterion, greatest conservation value will be achieved through the selection of a network of sites that provide habitat for waterbird assemblages containing globally threatened species or subspecies. These are poorly represented now in the Ramsar List. Non-native waterbirds should not be included within the totals for a particular site.

This Criterion will apply to wetlands of varying size in different Contracting Parties. While it is impossible to give precise guidance on the size of an area in which these numbers may occur, wetlands identified as being of international importance under Criterion 5 should form an ecological unit, and may thus be made up of one big area or a group of smaller wetlands. consideration may also be given to turnover of waterbirds at migration periods, so that a cumulative total is reached, if such data are available.

Criterion 6: A wetland should be considered internationally important if it regularly supports one percent of the individuals in a population of one species or subspecies of waterbird.

Long-term Target for the Ramsar List: To have included in the Ramsar List all wetlands which regularly support one percent or more of a biogeographical population of waterbird species or subspecies.

Guidelines: When Contracting Parties are reviewing candidate sites for listing under this Criterion, greatest conservation value will be achieved through the selection of a suite of sites that hold populations of globally threatened species or subspecies. Consideration may also be given to turnover of waterbirds at migration periods, so that a cumulative total is reached, if such data are available.

To ensure international comparability, where possible, Contracting Parties should use the international population estimates and one percent thresholds published and updated every three years by Wetlands International as the basis for evaluating sites for the List using this Criterion. Contracting Parties should not only supply data for the future update and revision of international waterbird population estimates, but also support the national implementation and development of Wetlands International's *International Waterbird Census*, which is the source of much of these data.

Specific criteria based on fish

Criterion 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.

Long-term Target for the Ramsar List: To have included in the Ramsar List those wetlands that support a significant proportion of indigenous fish subspecies, species or families and populations.

Guidelines: Fishes are the most abundant vertebrates associated with wetlands. Worldwide, over 18 000 species of fishes are resident for all or part of their life cycles in wetlands. Criterion 7 indicates that a wetland can be designated as internationally important if it has a high diversity of fishes and shellfishes. It emphasizes the different forms that diversity might take, including the number of taxa, different life-history stages, species interactions, and the complexity of interactions between the above taxa and the external environment. Species counts alone are not sufficient to assess the importance of a particular wetland. In addition, the different ecological roles that species may play at different stages in their life cycles need to be considered.

Implicit in this understanding of biological diversity is the importance of high levels of endemism and of biodisparity. Many wetlands are characterized by the highly endemic nature of their fish fauna. Some measure of the level of endemism should be used to distinguish sites of international importance. If at least 10% of fish are endemic to a wetland, or to wetlands in a natural grouping, that site should be recognized as internationally important, but the absence of endemic fishes from a site should not disqualify it if it has other qualifying characteristics. In some wetlands, such as the African Great Lakes, Lake Baikal in the Russian Federation, Lake Titicaca in Bolivia/Peru, sinkholes and cave lakes in arid regions, and lakes on islands, endemism levels as high as 90-100% may be reached, but 10% is a practical figure for worldwide application. In areas with no endemic fish species, the endemism of genetically-distinct infraspecific categories, such as geographical races, should be used.

Over 734 species of fish are threatened with extinction worldwide, and at least 92 are known to have become extinct over the past 400 years. The occurrence of rare or threatened fish is provided for in Criterion 2.

An important component of biological diversity is biodisparity, i.e. the range of morphologies and reproductive styles in a community. The biodisparity of a wetland community will be determined by the diversity and predictability of its habitats in time and space, i.e. the more heterogeneous and unpredictable the habitats, the greater the biodisparity of the fish fauna. For example, Lake Malawi, a stable, ancient lake, has over 600 fish species of which 92% are maternal mouthbrooding cichlids, but only a few fish families. In contrast, the Okavango Swamp of Botswana, a palustrine floodplain that fluctuates between wet and dry phases, has only 60 fish species but a wider variety of morphologies and reproductive styles, and many fish families, and therefore has a greater biodisparity. Measures of both biological diversity and biodisparity should be used to assess the international importance of a wetland.

Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Long-term Target for the Ramsar List: To have included in the Ramsar List those wetlands that provide important food sources for fishes, or are spawning grounds, nursery areas and/or on their migration path.

Guidelines: Many fishes (including shellfishes) have complex life histories, with spawning, nursery and feeding grounds widely separated and long migrations necessary between them. It is important to conserve all those areas that are essential for the completion of a fish's life cycle if the fish species or stock is to be maintained. The productive, shallow habitats offered by coastal wetlands (including coastal lagoons, estuaries, salt marshes, inshore rocky reefs and sandy slopes) are extensively used as feeding and spawning grounds and nurseries by fishes with openwater adult stages. These wetlands therefore support essential ecological processes for fish stocks, even if they do not necessarily harbour large adult fish populations themselves.

Furthermore, many fishes in rivers, swamps or lakes spawn in one part of the ecosystem but spend their adult lives in other inland waters or in the sea. It is common for fishes in lakes to migrate up rivers to spawn, and for fishes in rivers to migrate downstream to a lake or estuary, or beyond the estuary to the sea, to spawn. Many swamp fishes migrate from deeper, more permanent waters to shallow, temporarily inundated areas for spawning. Wetlands, even apparently insignificant ones in one part of a river system, may therefore be vital for the proper functioning of extensive river reaches upstream or downstream of the wetland.

This is for guidance only and does not interfere with the rights of Contracting Parties to regulate fisheries within specific wetlands and/or elsewhere.

Appendix 2: The Ramsar Convention Classification System for Wetland Types

The codes are based upon the *Ramsar Classification System for Wetland Types* as approved by Recommendation 4.7 and amended by Resolution VI.5 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

Marine/Coastal Wetlands

- A - Permanent shallow marine waters in most cases less than six metres deep at low tide; includes sea bays and straits.
- B - Marine subtidal aquatic beds; includes kelp beds, sea-grass beds, tropical marine meadows.
- C - Coral reefs.
- D - Rocky marine shores; includes rocky offshore islands, sea cliffs.
- E - Sand, shingle or pebble shores; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
- F - Estuarine waters; permanent water of estuaries and estuarine systems of deltas.
- G - Intertidal mud, sand or salt flats.
- H - Intertidal marshes; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
- I - Intertidal forested wetlands; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.
- J - Coastal brackish/saline lagoons; brackish to saline lagoons with at least one relatively narrow connection to the sea.
- K - Coastal freshwater lagoons; includes freshwater delta lagoons.
- Zk(a) - Subterranean karst and cave hydrological systems, marine/coastal

Inland Wetlands

- L - Permanent inland deltas.
- M - Permanent rivers/streams/creeks; includes waterfalls.
- N - Seasonal/intermittent/irregular rivers/streams/creeks.
- O - Permanent freshwater lakes (over 8 ha); includes large oxbow lakes.
- P - Seasonal/intermittent freshwater lakes (over 8 ha); includes floodplain lakes.
- Q - Permanent saline/brackish/alkaline lakes.
- R - Seasonal/intermittent saline/brackish/alkaline lakes and flats.
- Sp - Permanent saline/brackish/alkaline marshes/pools.
- Ss - Seasonal/intermittent saline/brackish/alkaline marshes/pools.
- Tp - Permanent freshwater marshes/pools; ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.
- Ts - Seasonal/intermittent freshwater marshes/pools on inorganic soils; includes sloughs, potholes, seasonally flooded meadows, sedge marshes.
- U - Non-forested peatlands; includes shrub or open bogs, swamps, fens.
- Va - Alpine wetlands; includes alpine meadows, temporary waters from snowmelt.
- Vt - Tundra wetlands; includes tundra pools, temporary waters from snowmelt.
- W - Shrub-dominated wetlands; shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.
- Xf - Freshwater, tree-dominated wetlands; includes freshwater swamp forests, seasonally

flooded forests, wooded swamps on inorganic soils.

Xp - Forested peatlands; peatswamp forests.

Y - Freshwater springs; oases.

Zg - Geothermal wetlands.

Zk(b) - Subterranean karst and cave hydrological systems, inland.

Note: "floodplain" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrub lands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands

1 - Aquaculture (e.g. fish/shrimp) ponds.

2 - Ponds; includes farm ponds, stock ponds, small tanks; (generally below 8 ha).

3 - Irrigated land; includes irrigation channels and rice fields.

4 - Seasonally flooded agricultural land (including intensively managed or grazed wet meadow or pasture).

5 - Salt exploitation sites; salt pans, salines, etc.

6 - Water storage areas; reservoirs/barrages/dams/impoundments (generally over 8 ha).

7 - Excavations; gravel/brick/clay pits; borrow pits, mining pools.

8 - Wastewater treatment areas; sewage farms, settling ponds, oxidation basins, etc.

9 - Canals and drainage channels, ditches.

Zk(c) - Subterranean karst and cave hydrological systems, human-made.

Appendix 3: List of Canadian Ramsar Sites

Canada's 36 Ramsar sites are distributed among all of the nation's 10 provinces and three territories.

Site/Location	Area Designated (ha)	Year Designated
Atlantic Canada:		
Grand Codroy Estuary	925	1987
Malpeque Bay	24 440	1988
Chignecto	1 020	1985
Musquodoboit Harbour Outer Estuary	1 925	1987
Southern Bight, Minas Basin	26 800	1987
Mary's Point	1 200	1982
Shepody Bay	12 200	1987
Tabusintac Estuary and Lagoon	4 997	1993
Central Canada:		
Cap-Tourmente	2 398	1981
Baie de L'Isle-Verte	2 028	1987
Lake St. Francis	2 214	1987
Lake St. Pierre	11 952	1998
Long Point	13 730	1982
Matchedash Bay	1 840	1996
Mer Bleue	1 300	1995
Minesing Swamp	6 000	1996
St. Clair	244	1985
Polar Bear Provincial Park	2 408 700	1987
Southern James Bay	25 290	1987
Point Pelee	1 564	1987
Western/Pacific Canada:		
Delta Marsh	23 000	1982
Oak Hammock Marsh	3 600	1987
Last Mountain Lake	15 602	1982
Quill Lakes	63 500	1982
Whooping Crane Summer Range	1 689 500	1982
Peace-Athabasca Delta	321 300	1982
Hay-Zama Lakes	50 000	1982
Beaverhill Lake	18 050	1987
Alaksen	586	1982
Creston Valley	6 970	1994
Northern Canada:		
Polar Bear Pass	262 400	1982
Queen Maud Gulf	6 278 200	1982
Rasmussen Lowlands	300 000	1982
McConnell River	32 800	1982
Dewey Soper	815 900	1982
Old Crow Flats	617 000	1982