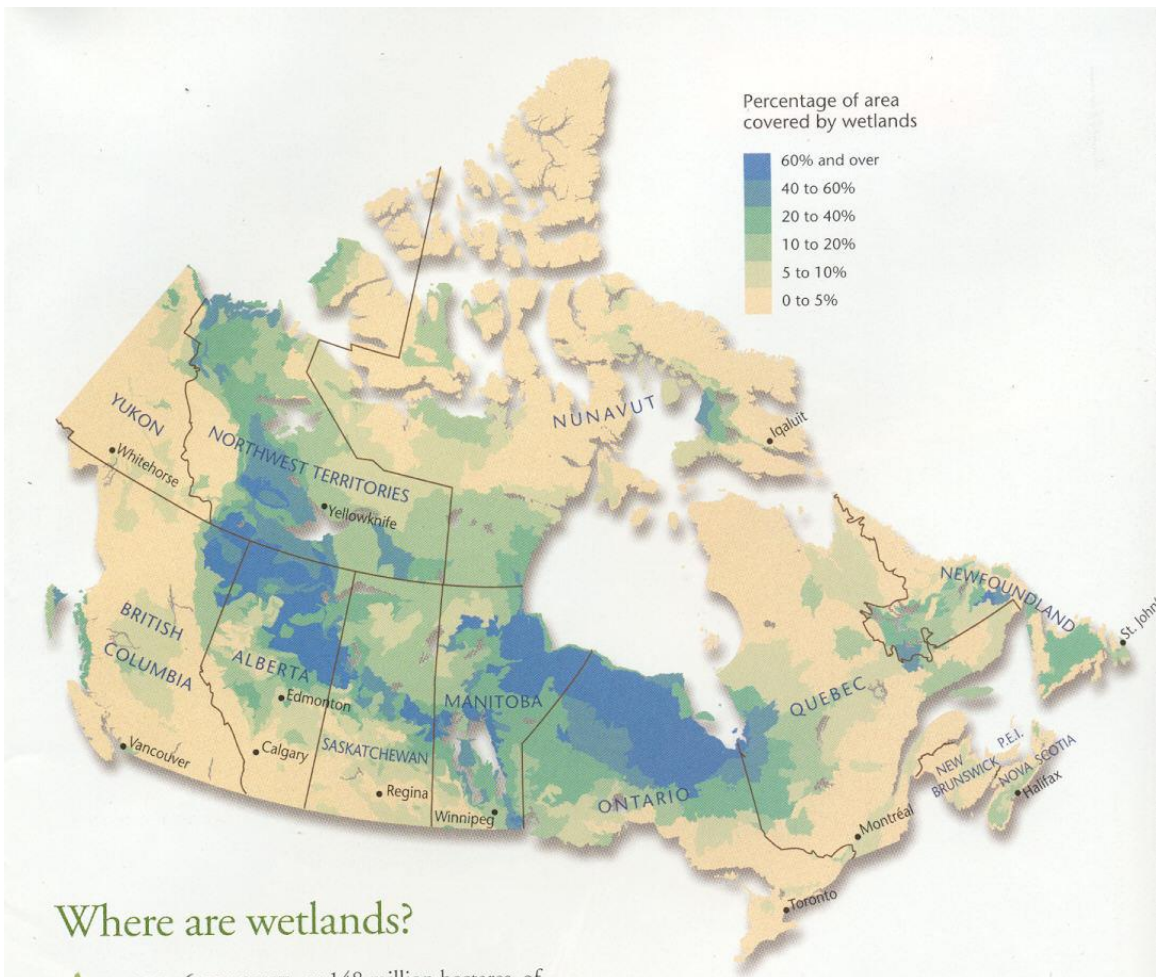


ANNEXE C

Canada's Wetlands, Canadian Geographic, May/June 2000



Where are wetlands?

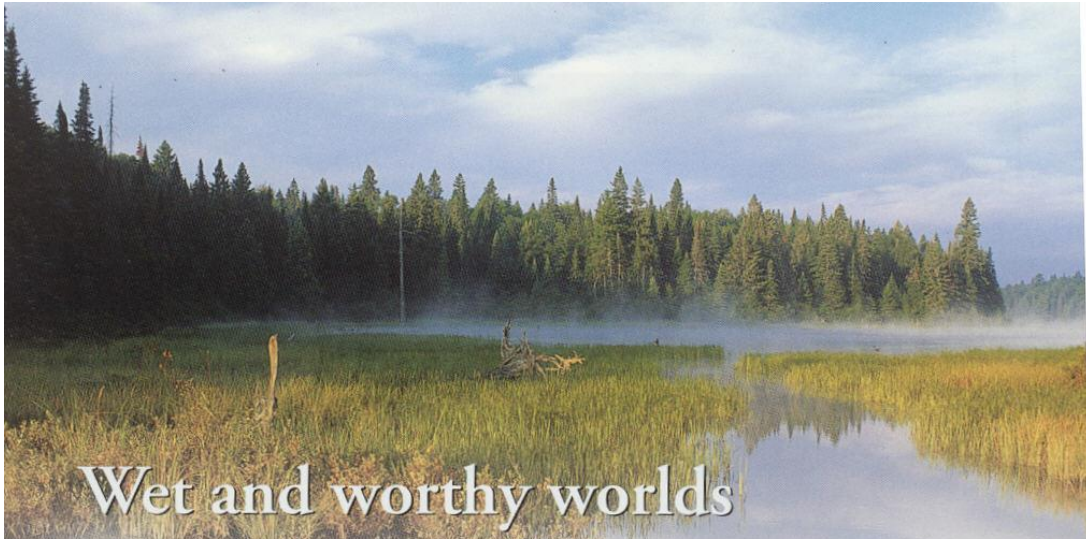
ALMOST 16 PERCENT, of 148 million hectares, of Canada's land mass is inundated with wetlands. They are found in every province and territory, but the majority — 63 percent — comprise the peatland belt, which stretches from Northern Ontario through central Manitoba and up to the Mackenzie Valley in the Northwest Territories. Its cool summers, frigid winters and relatively little precipitation are ideal for peat accumulation.

Glacial action over the ice ages determined where wetlands developed by shaping the lay of the land, leaving depressions that eventually filled with water as ice broken from the retreating glaciers melted into pits formed by the grinding icefields.

Worldly wetlands

ABOUT FOUR PERCENT of the planet is covered in wetlands, with most concentrated in mid-latitude and equatorial regions. The former Soviet Union holds some 150 million hectares of the world's wetlands. Finland has 10.4 million hectares; Sweden has seven million hectares; Norway, three million hectares; and the British Isles, 2.7 million hectares.



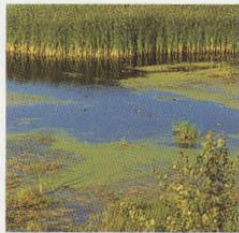


Wet and worthy worlds

FULLY A QUARTER of the world's swamps, bogs and marshes are found in Canada. Once seen as a curse to be endured until drained for farming, they are now recognized as vital indicators of the planet's ecological health. Part land, part water, wetlands are transition zones where life loves to bask. Some cover areas larger than the Great Lakes, others are as small as backyard pools. They are nature's cities, teeming with a buzzing, quacking array of wildlife or hosting a mere handful of fragile species. They are also nature's flood-

control mechanisms, holding and gradually releasing snowmelt and rainfall, recharging groundwater and reducing erosion. Cranberries, blueberries, wild rice, peat, sphagnum moss and fish are harvested from Canada's wetlands. Count in the revenue generated by recreation and education — people venturing into parks and reserves to watch wetland life — and you have a \$20-billion annual contribution to the economy. Scientists in Canada identify wetland types using the following broad categories:

Marsh and shallow open water

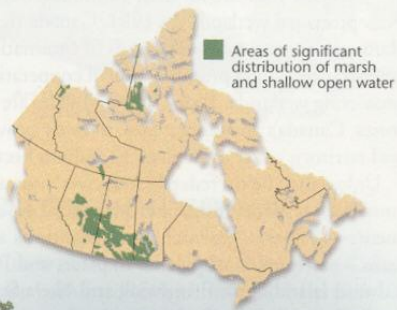


THE MOST biologically rich and diverse wetlands, marshes have mineral soils and hold no more than two metres of flowing water most or all the time. Freshwater marshes formed in prairie pothole regions as

depressions in the land filled with water from receding glaciers. Along the Great Lakes, they were formed by waves breaching barrier beaches or levees. Coastal areas protected from destructive waves and storms harbour salt marshes. Marsh bottoms have no distinct peat layer, since organic material decomposes rapidly and much of it is carried away by currents into adjacent water bodies.

Ponds, shallow lakes and stream and river shorelines are categorized as shallow open water, the transitional zone between marshes and lakes. Most have open expanses of shallow water two metres or less in depth with some floating vegetation, such as

water lilies and duckweed. The mucky, highly organic soil at the bottom is underlain with sand and gravel and may dry out at times during the year. Shallow open water receives nutrients from groundwater, runoff, other water bodies and precipitation, making it a highly productive wetland.



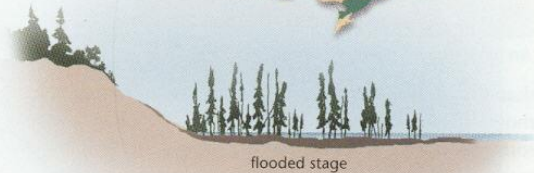
BACKGROUND: MIKE GRANDMAISON; CLOCKWISE FROM TOP LEFT: DONALD STANDFIELD/FIRST LIGHT; ROBERT MCCAW; MARK HOBSON; MIKE GRANDMAISON (2)

Swamp

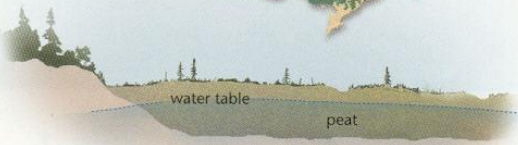


SWAMPS ARE WOODED wetlands within poorly drained depressions — along lake margins, flood plains or oxbow lakes — that flood at least part of the year. They differ from marshes in their dense tree or shrub growth. Boreal

forest swamps host cedar or white or black spruce, while southern swamps hold red or silver maple, ash or yellow birch. Groundwater entering the system adds nutrients that encourage plant growth. Swamps have a woody, moss-free and thin peat layer, since plants inject oxygen into the system, helping decomposers break down organic material.



flooded stage



water table

peat

Bog



BOGS ARE FED by rainwater and snowmelt, so few nutrients flow into them. Only vegetation adapted to wet, acidic, nutrient-poor conditions thrive in a bog, such as orchids, pitcher plants and cotton grass.

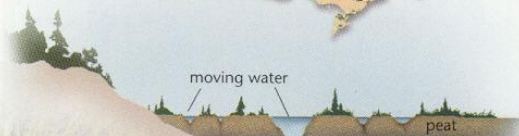
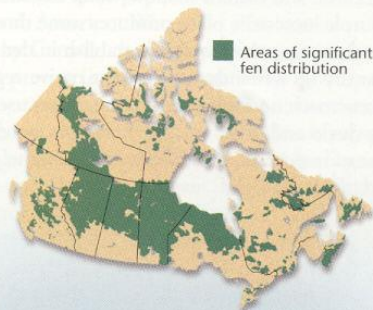
Bogs are oxygen-poor and thus host few decomposers to break down organic matter. Instead, it accumulates in a thick layer of soil, called peat. Bog plants nestled in deep mats of spongy sphagnum moss are supported by thick accumulations of peat. Stunted and sparse tamarack and black spruce also dot boggy landscapes across boreal Canada.

Fen



FENS ARE BOGS WITH better drainage. Nutrients enter from streams, runoff and groundwater, allowing more diverse vegetation, such as bulrushes, sedges and wildflowers to grow. Although fens are more alkaline and biologically productive than bogs, many still contain at least 40

centimetres of peat, and decomposition is slow. They are enormous water reservoirs — 3.2 million litres per hectare for every 30 centimetres of depth — partly because vegetation fills the water column from surface to bedrock. Fens are also common in boreal areas.



moving water

peat

