

T11.5 FRESHWATER WETLAND BIRDS AND WATERFOWL

Freshwater and coastal aquatic habitats are used by water birds, which feed on aquatic organisms, and by many other birds which frequent the varied vegetation of water-land interfaces. This Topic deals mainly with birds associated with freshwater habitats. Waterfowl (ducks and geese) have been studied much more than other wetland birds, and factors influencing their distribution are discussed separately.

HABITAT FACTORS

Table HI.1 in the Introduction to **Habitats** compares terminology used to classify wetlands in various systems and identifies the terminology chosen for wetland habitats in the *Natural History of Nova Scotia*.

Discussion of water birds requires rational arrangement of wetland habitats. As a minimum, the

habitat framework involves consideration of the successional process by which vegetation and mineral soil encroach on freshwater areas, converting them to terrestrial habitats (see H3.6). It also integrates the gradients from open sea to lakes and to dry land. T11.2 and T11.3 mention bog forests and open bogs and marshes, which are also transitional to the wetland habitats treated here. T11.6 discusses birds of the coastal habitats, in which lands meet the sea.

The hydrosere describes gradients, over time, from open water to terrestrial habitats. In fertile (eutrophic) situations, the gradient goes from open water with only submerged aquatic vegetation through deep and shallow marshes, with emergent herbaceous vegetation standing in water; to shrubby or treed swamps, with woody vegetation standing in water for at least part of the year; to deciduous forests and shrubby thickets (carrs) on damp soils. In less fertile and more acidic situations, the



T11.5
Freshwater
Wetland Birds
and Waterfowl

Plate T11.5.1: Male Common Merganser spend most of the winter in brackish salt water along the coast where fish are accessible. Photo: B. Bancroft

(oligotrophic/dystrophic) gradient passes from open waters, often with rocky shorethrough water areas, with some emergent vegetation; to wet areas, with some standing water and shrubby as well as herbaceous vegetation; to damp areas (bogs), with a surface mat and shrub and moss hummocks plus well-spaced small trees; and to low bog-forest of conifers. These processes are slow, progressing over several hundred years for completion, unless interrupted by fires or changes in water level (e.g., impoundments or drainage) during that time. At all stages, there is also a small-scale gradient from the wetlands through water-edge (riparian) habitats to adjacent drier lands.

Marine areas and coastal wetlands are treated in succeeding topics (see T11.6 and T11.7). The other gradients start from open salt water, one passing through the brackish water of estuaries to the fresh waters of rivers, lakes and brooks; the other including salt marshes and barrier-beach lagoons (brackish), through fresh marshes, to moist terrestrial habitats.

WETLAND USERS

“Many birds characteristic of wetlands nest some distance away on dry land, often in a plant community in no way associated with wetlands.”¹ Others nest in vegetation above or adjoining the waters of wetlands. Various groups of birds lead their young from the nest, before these can fly, to rear them on open water, in marshes, or on shores. Nevertheless, many birds may be assigned to particular stages of one or more gradients, though some more-tolerant species occur in nearly all wetland habitats.

Open Water

Several water birds “spend most of their time, including foraging, resting, and preening, on open water, but these do not nest over water as a rule. This is a heterogeneous group linked only by their dependence on deeper open waters for feeding.”¹ They feed mostly on fish and include

- Common Loons
- Double-crested Cormorant (few; most in Nova Scotia are coastal birds)
- Great Blue Heron (few; most here are coastal birds)
- Common Goldeneye
- Hooded Merganser and Common Merganser (see plate T11.5.1)

The three latter species all use tree cavities for nesting. Some Ospreys and Bald Eagles, also tree nesters, frequent fresh waters, as do a few Herring Gulls and Common Terns, though these species usually use coastal areas in this province.

Deep and Shallow Marshes

Birds that build floating nests anchored to aquatic vegetation seldom go ashore for any purpose. These, along with others that nest in emergent plants above water, comprise the marsh-bird community. This community is poorly represented in Nova Scotia. The Red-winged Blackbird is the only common songbird in this group, and it has spread greatly here in the last half-century. Others include

- Pied-billed Grebe (local)
- American Bittern
- Sora
- Virginia Rail (local)

Several other marsh birds which have bred in very small numbers in Nova Scotia’s border region (Unit 523) are almost unknown elsewhere in the province.

These include

- Yellow Rail
- Common Moorhen
- American Coot
- Black Tern
- Marsh Wren

Various ducks also belong here, although most nest in upland situations. Only a few are widespread, including Green-winged Teal, Black Duck and Ring-necked Duck.

Most other dabbling ducks, such as the Mallard and Blue-winged Teal, or the scarcer Northern Pintail, Northern Shoveler, Gadwall and American Wigeon, are virtually confined to the few fertile marshes. Wood Ducks, which nest in tree cavities and artificial nest boxes, also lead their young to marshes for rearing. Redheads and Ruddy Ducks are marginal species, virtually restricted in this province to the border region. The Least Bittern is considered vulnerable in Nova Scotia according to COSEWIC ratings; however, its habitat, especially in artificial impoundments, is increasing.²

Wet Pasture or Meadow

Seasonally flooded wet areas, characterized by grasses, sedges and poorly drained soils, are used by various wetland songbirds as well as larger species. These habitats are generally associated with or altered by human activity. Some birds use these habitats through the summer (e.g. Northern Harrier,

Common Snipe, Savannah Sparrow, Swamp Sparrow, Red-winged Blackbird). Dabbling ducks also occur here in spring and early summer before flood water levels recede. Swallows also forage over wet meadows throughout the summer.

Swamp and Riparian Shrubbery

Wooded swamps on floodplains provide favourable habitat for the tree-cavity-nesting ducks noted above. Shrubby swamps are used particularly by a few species: American Woodcock, Yellow Warbler, Northern Waterthrush, Common Yellowthroat. Swamp forests harbour a wide array of forest birds that also occur regularly in other deciduous forests (e.g., Eastern Wood-Pewee, Veery, American Robin, Northern Parula Warbler, American Redstart, Song Sparrow).

Lakes and Rivers with Stony or Unvegetated Shores

Common Mergansers and Spotted Sandpipers are the characteristic birds of these less-fertile waters. Belted Kingfishers and Bank Swallows, which burrow in exposed banks to nest, also use these habitats as well as others. Many of these birds also nest around coastal wetlands with open shores.

Fens and Bogs

Both these vegetated wetlands generally have their water table at the level of the land. However, the distinction is in higher (fen) vs. lower (bog) nutrient supply for the vegetation. There is also a gradient from open to shrubby bogs and on to low bog forest. Most birds found in these habitats are tolerant species that occur widely in other wetlands, for example Black Duck, Ring-necked Duck, Northern Harrier and Common Snipe.

Various songbirds are also regular, such as Alder Flycatcher, Palm Warbler, Common Yellowthroat, Song Sparrow, Lincoln's Sparrow, Swamp Sparrow, Red-winged Blackbird, Rusty Blackbird and Common Grackle. Of all these, only Palm Warblers and Rusty Blackbirds are nearly restricted to bog habitats.

WATERFOWL ECOLOGY AND DISTRIBUTION

Some of the major factors influencing the use of inland habitats by waterfowl include fertility, climate, shoreline gradient and water/land interspersions and the disturbance of birds and their habitats.

Fertility

Insufficient nutrients in the soil and water limit the growth of vegetation and aquatic invertebrates used by waterfowl. Excessive salinity or acidity, or other

chemical factors, can also inhibit growth of plants and animals, even in the presence of adequate nutrients.

Climate

Factors include duration and extent of ice cover, water-level variability, and incidence of unfavourable rainfall/temperature combinations during the hatching period. Springtime flooding sometimes destroys nests. Adverse conditions at hatching reduce productivity and early freeze-up may affect how long both local birds and migrants remain in an area.

Shoreline Gradient and Water/Land Interspersion

Shallow, sloping shorelines permit more extensive marsh development. A wetland with islands and a highly indented shoreline provides isolated breeding spaces for more ducks than would a similar area with more regular shoreline. The interspersions and juxtaposition of vegetation, influenced by all of the above factors, also act on the use of the area by waterfowl.

Disturbance of Birds and their Habitat

People and domestic animals can make some otherwise-suitable wetlands unacceptable to waterfowl. Major human disturbances to wetland bird habitat include the use of motor vehicles and other machines, including motorboats, in or adjacent to wetlands; spring burning or cultivation of open lands near water; hunting; and drainage, dumping or other destruction of wetlands.

Waterfowl production in Nova Scotia occurs in three main habitat complexes:

1. a very few, very small, fertile freshwater wetlands with high densities and high diversity of breeding ducks
2. more, but still few, more-or-less brackish to saltwater wetlands associated with coastal bays and inlets, with moderate to low densities and low diversity (mainly Black Ducks, with some Blue-winged Teals); this category is discussed further in T11.6 but is included here for a fuller perspective
3. the vast majority of inland wetlands, generally quite infertile and featuring very low densities and low diversity (Black Ducks and Ring-necked Ducks)

A preliminary estimate of breeding waterfowl numbers in the Atlantic provinces¹ suggested that the relative densities (pairs/km²) in these categories were roughly

- a. 12–115; b. 30; c. 0.06–6.

The spring duck population (breeding pairs) by habitat works out to roughly
 a. 4336; b. 9510; c. 8854
 —or about 19, 42 and 39 per cent, respectively, of the total.

The few fertile areas attract attention, by both hunters and bird-watchers, out of all proportion to their area, because both density and diversity of ducks are much higher than elsewhere. The border lowlands (Unit 523) are the best known of these areas, comprising mostly former coastal marshes converted, by dyking, drainage, and subsequent re-flooding, into impoundments managed for waterfowl and wild-rice production. Gypsum deposits also contribute to the fertility of local wetlands at Amherst Point and locally elsewhere in the province. Rivers, where seasonal inundation by runoff has allowed development of floodplains, are also of above-average fertility, and a few wetlands have been enriched by nutrients from agricultural runoff. Examples of the former are the Musquodoboit, Shubenacadie, Stewiacke, and Kennetcook valleys in central Nova Scotia (sub-Unit 511a), and the Margaree Valley on Cape Breton Island (Unit 591).

Lakes and stillwater areas of streams throughout the province provide many small pockets of breeding and brood-rearing habitat for ducks, and beaver flowages provide some of the better inland habitat for a variety of wetland species. Although densities there are low, the large total area of "hinterland habitats" across the province accounts for a quite significant part of the total duck production. As disturbance by people there, including hunting, is usually much less than in the more fertile areas, it is possible that the infertile hinterlands are net exporters of ducks, and they help to maintain numbers in the fertile areas.

BIRD USE OF FRESHWATER WETLANDS OUTSIDE THE BREEDING SEASON

Birds that breed in Nova Scotia wetlands often remain there for weeks or months after the year's young are fully fledged. Numbers of waterfowl in Nova Scotia's inland waters often reach annual peaks during August, although sanctuary areas (e.g. Amherst Point) may hold large numbers again in the first weeks of the duck-hunting season. Freezing prevents most use of fresh waters by aquatic birds during the winter months each year. Most plant and animal foods used by wetland birds are obtained from the water. As most production of food organisms there ends even before freezing commences,

most birds move away from freshwater wetlands during September and October. Except where current, in rapids or at the outflows of hydroelectric dams, keeps inland waters open, few water birds occur there between early November and late March. Common Goldeneyes and Common Mergansers are the species that winter most regularly on fresh waters in this province, although they are also commonly found along the coast (see Plate T11.5.1).

In spring, the urge to breed brings some water birds back to inland marshes as soon as any open water is present. Black Duck pairs appear at spring holes in brooks and wet pastures in March, and the spring thaws soon provide places for local breeders. The bulk of the migrating waterfowl, however, congregate in coastal wetlands (see T11.6). Other species of water birds mostly return during April, with the more strictly insectivorous species, such as Yellow and Palm Warblers and Lincoln's Sparrow, arriving after mid-May.



Associated Topics

T8.2 Freshwater Environments, T8.3 Freshwater Wetlands, T11.1 Factors influencing Birds, T11.2 Forest and Edge-habitat Birds, T11.3 Open-habitat Birds, T11.6 Shorebirds and Other Birds of Coastal Wetlands, T12.11 Animals and Resources.

Associated Habitats

H3.1 Open Water Lotic (Rivers & Streams), H3.2 Open Water Lentic (Lakes & Ponds), H3.5 Hydrosere Lotic (Rivers & Streams), H3.6 Hydrosere Lentic (Lakes & Ponds), H4 Freshwater Wetlands

References

- 1 Erskine, A.J. (1977) *Birds in Boreal Canada: Communities, Densities and Adaptations*. Canadian Wildlife Service. (Report series no. 41).
- 2 Erskine, A.J. (1992) *Atlas of Breeding Birds of the Maritime Provinces*. Nimbus Publishing & Nova Scotia Museum, Halifax.

Additional Reading

- Brylinsky, M. (1993) *Evaluation of controlled fertilization of acidified wetlands for enhancement of waterfowl production*. Acadia University, Wolfville, N.S. (*Acadia Centre for Estuarine Research Publication No. 28*).
- Canada Land Inventory (1970) *Land Capability Classification for Wildlife*. (Report No. 7).
- Erskine, A.J. (1971) "Bird communities in and around Cape Breton wetlands." *Can. Field-Nat.* 85.
- Erskine, A.J., ed. (1987) *Waterfowl Breeding Population Surveys, Atlantic Provinces*. Canadian Wildlife Service, Ottawa. (*Occasional Paper no. 60*).
- Kerekes, J. (1990) "Possible correlation of Common Loon population with the trophic state of a water body." *Internat. Verein. Limnol. Verh.* 24.
- Kerekes, J., R. Tordon, A. Nieuwburg and L. Risk (1992) "Fish eating bird abundance in oligotrophic lakes in Kejimikujik National Park, Nova Scotia, Canada." In *Proceedings Symposium on Aquatic birds in the Trophic Web of Lakes, Sackville, N.B., Canada. August 19-22, 1991. Hydrobiologia*.
- Lunn, S. (1973) *Avifaunal Survey of Kejimikujik National park, 1972-1973*. Parks Canada, 72-31.
- Tufts, R.W. (1986) *The Birds of Nova Scotia*, 3rd ed. Nimbus Publishing & Nova Scotia Museum, Halifax.