



*Suburban expansion and the demand for more golf courses is impacting the rural landscape.*

# The Bird Community Found on British Columbia Golf Courses

by IAN E. MOUL and  
JOHN E. ELLIOTT  
Canadian Wildlife Service,  
Delta, British Columbia

**I**N BRITISH COLUMBIA, like most regions in North America, the popularity of golf has resulted in many proposals for new courses. New golf course developments are often at the interface between expanding population centers and diminishing rural lands. If urbanization trends continue as expected, golf courses will provide important green spaces. In an effort to foster the inclusion of wildlife habitat within new golf courses, we undertook a project to survey the birds found on existing courses, and

to compare bird numbers and species richness with the habitats offered.

## Study Area and Methods

Birds were counted on eight golf courses located in the Fraser Valley region of British Columbia. The courses were chosen to reflect a range of potential wildlife habitat from very open sites with minimal tree cover to sites with large areas of trees and hedgerow. On four of the courses, we

mapped the major vegetation and classified habitats as:

1. Turf — all areas of intensive turf maintenance, including the greens, tees, fairways, and areas of rough not associated with trees, shrubs, or brush.
2. Water — all lakes, ponds, streams, and ditches.
3. Hedgerow — all areas of trees, shrubs, or brush where understory vegetation was minimally maintained and allowed to grow naturally.

**Table 1.**  
**The Golf Course Bird Community and the Habitats Where They Are Found**

Bird Species	Habitat			
	Water	Grass	Hedgerow	Tree
Great Blue Heron	■			
Canada Goose	■	■		
Mallard	■	■		
Bufflehead	■			
Hooded Merganser	■			
Bald Eagle			■	■
Red-Tailed Hawk			■	■
Killdeer		■		
Glaucous-Winged Gull	■	■		
Belted Kingfisher	■			
Downy Woodpecker			■	■
Northern Flicker		■	■	■
Violet-Green Swallow	■	■	■	■
Barn Swallow	■	■	■	■
Northwestern Crow		■	■	■
Black-Capped Chickadee			■	■
Bushtit			■	■
Winter Wren			■	■
Golden-Crowned Kinglet			■	■
Ruby-Crowned Kinglet			■	■
American Robin		■	■	■
Cedar Waxwing			■	■
European Starling		■	■	■
Orange-Crowned Warbler			■	■
Yellow Warbler			■	■
Rufous-Sided Towhee			■	■
Song Sparrow			■	■
Dark-Eyed Junco			■	■
Red-Winged Blackbird	■		■	
Brewer's Blackbird		■	■	■
Brown-Headed Cowbird			■	■
House Finch			■	■
Pine Siskin			■	■
American Goldfinch			■	■
Evening Grosbeak			■	■
House Sparrow			■	■

4. Trees — individual or groups of trees or shrubs of any species where the understory vegetation has been removed.

Between July 1990 and July 1991, during 152 bird counts, the species and the numbers of all birds seen or heard (on all eight courses) were recorded, along with the habitat in which they were found (four courses).

### Results and Discussion

A total of 19,443 birds representing 103 species were observed during this study. Twenty of these species were seen only once, on one golf course, and were considered accidental. We considered 36 species (Table 1), observed on over half the courses surveyed, to form the community of birds likely to be found on golf courses. Within this community, some species were very abundant, while others were present in lower numbers. Eight species, the European starling, American robin, mallard, Northwestern crow, Canada goose, barn swallow, dark-eyed junco, and black-capped chickadee, were among the 10 species most commonly sighted and also the 10 most numerous species. Collectively, these birds represented 69.8% of all the birds counted; they have minimal habitat requirements and could also be found in parks and neighborhoods throughout the study area. Bird species observed in low numbers were often associated with a specific habitat. Great blue herons and hooded mergansers were found associated with water bodies of sufficient quality to support the fish consumed by those birds. Woodpeckers, kinglets, and wrens were found in hedgerows and treed areas.

Wildlife habitats offered by golf courses may be judged by how effectively they meet the most basic requirements of birds: food and shelter. We noticed a considerable difference among the habitats found on the golf courses surveyed. During the initial surveys in July and August 1990, the species count on eight courses ranged from 14 to 46. While we did not measure the habitats at the time, it was clear that those courses with minimal foliage or small, recently planted trees had less habitat to offer birds, and the species diversity was accordingly low (14 to 16 species). This is not to say that those courses were without some suitable habitat. On one course we frequently observed a green-backed heron foraging or roosting in vegetation along the edges of one pond. The presence of this uncommon species indicates the value of the habitat offered.

In terms of overall numbers of birds counted, just under half were seen on turf (Table 2). If we consider bird numbers per land area of each habitat, though, turf accounted for only 1/4 that of water, 1/2 that

**Table 2**  
**Species Counts and Total Number of Birds Counted in Four Types of Habitat Found on Four Golf Courses During 30 Counts at Each Course from November 1990 to July 1991**

Habitat	Number of Bird Species	Total Number of Birds	Land Area Surveyed (Acres)	Average Number of Birds/Acre
Turf	19	6,355	127.0	1.6
Water	22	4,871	7.2	22.6
Hedgerow	40	1,210	12.8	3.2
Trees	37	1,348	25.2	1.8
Total	73	13,784*	172.2	2.6

\*This total excludes 1,519 birds observed flying

of hedgerow, and was the lowest in species richness. Of the birds using turf, the American robin and the European starling together accounted for over 80% of the birds counted. Large numbers of American wigeon were observed feeding on turf during the winter at one course. As golfers approached, the wigeon would flush to nearby ponds, returning to the turf as the golfers passed. Of the species using turf, only Canada geese, mallards, and glaucous-winged gulls used turf surfaces for resting.

Water, while it only accounted for 4% of the land area surveyed, contained the greatest density of birds. The American wigeon was the most numerous species, accounting for 47.5% of the birds seen on water. Aside from the mallard at 39.4% and the Canada goose at 8.9%, all other species had a relative abundance of less than 1%. It was interesting to observe large numbers of American wigeon and mallards on the water at one golf course despite the fact that they did not use the habitat for foraging. At least during the winter, they used the ponds exclusively as a safe place to rest.

The differences between hedgerow and tree habitats, as we defined them, were due to the clearing of underbrush at tree bases. From the golfer's perspective, minimal vegetation makes it easier to locate stray golf balls. The removal of ground vegetation, from the perspective of a ground-feeding bird, means the elimination of a place to retreat from predators or from perceived threats, such as passing golfers. On the courses we visited, hedgerows often were located along course boundaries, screening a service road, or at a junction between a green, tee, and an adjacent fairway. Hedgerows often were not large, but formed a valuable habitat island within the open turf expanse.

Hedgerows had the greatest species richness of all the habitats observed. With the more common bird species, there was little difference in numbers between hedgerows and trees. For species observed less frequently, more birds per acre were located in hedgerows. Of the two species of woodpecker, both the downy woodpeckers and the northern flickers were seen twice as often in hedgerows as in trees. Of the birds typically found on the ground or in lower-story vegetation, the dark-eyed junco, rufous-sided towhee, and song sparrow were, respectively, 4, 9, and 25 times more abundant in hedgerows versus trees.

## Conclusions and Recommendations

On the courses we visited, those with both the highest numbers of bird species and also the greatest numbers of birds (excluding those found on water) had extensive areas



(Top) The vegetation of this pond provides habitat for mallards and a green-backed heron.

(Above) This beaver pond on a Vancouver Island golf course is ideal habitat for nesting waterfowl and red-winged blackbirds.

of natural vegetation. Most of the courses we visited contained areas where additional wildlife habitat could be created. Small changes in management practices in locations away from immediate areas of play could increase the quality of habitat offered to wildlife without a great inconvenience to the golfer. A deep rough consisting of long grasses typical of abandoned fields would provide for species such as the ring-necked pheasant, common yellowthroat, and western meadowlark. Allowing bulrushes to grow in a pond or marshy area would supply the habitat needs of green-backed herons, red-winged blackbirds, American bitterns, and various species of waterfowl. We encourage

golf courses to join programs like the Audubon Cooperative Sanctuary Program, designed to acknowledge and enhance the wildlife component of golf courses. While golf courses never can be truly "natural" habitat, they can serve as urban green spaces and support a wildlife community.

*The information presented here was part of larger study, titled "A Survey of Pesticide Use and Bird Activity on Selected Golf Courses in British Columbia," Technical Report Series Number 163. Copies may be obtained from the Canadian Wildlife Service, Box 340, Delta, British Columbia, Canada, V4K 3Y3, (604) 946-8546.*