

Fig 18 Habitats indicated in red are examples of highest foraging value to birds of concern, thus pose highest risk to airport safety. Habitats in white are intermediate. Habitat examples in green are least attractive to birds of concern, and should be promoted on surfaces close to the runway and floatplane pond.

water other species like milfoil out-compete it). Proposals have included mechani-

It is hard to imagine an alternate airport location between Taku Inlet and Berner’s Bay that would pose higher risk of bird strikes than JNU. It’s also hard to name a location that would have greater impact to fish and wildlife habitat. Airport managers have inherited a mammoth challenge and responsibility on both counts.

Seeded grass Wilmoth (2001) discusses the liabilities of seeded grass runway margins. We ranked this habitat 7th most attractive out of 12. It would score even higher if we gave corvids equal weight to heron, waterfowl and gulls. We agree that pavement or coarse gravel would be less attractive than seeded grass to birds of concern.

Ditch-grass The east and west “finger ponds” – southward-extending arms of Floatplane Pond – are examples of shallow lagoons, the highest ranking of all 12 habitats at JNU for birds of concern. Much of this high value stems from availability of ditch-grass (*Ruppia maritima*), which attracts not only grazing waterfowl but predators seeking the swarms of sticklebacks and invertebrates that thrive in ditch-grass beds. Ditch-grass grows best in shallow ponds with coarse sediment, and in intermediate salinity (pure sea water kills it, and in fresh

cal or herbicide removal, stretching of wire grids over water to deter birds, deepening of the arms to a depth unsuitable for ditch-grass, and filling in the arms entirely.

We suggest filling *just the junctions* of the east and west arms, cutting off their connection with the Floatplane Pond. A mix of spruce, cottonwood, alder and willow should be planted on the fill. Overhanging deciduous cover would discourage loafing gulls and waterfowl and provide foraging/breeding habitat only to low-risk songbirds. A continuous strip of this habitat should rim the south edge of Floatplane Pond. If crows attempted to nest in spruce-dominated sections they could easily be hazed until they abandoned their rookeries. Trees at the junction of the arms with Floatplane Pond would provide a deflecting barrier for low-flying waterfowl that now move freely between them.

Cutting off the connection might also alter salinities enough to kill ditch-grass. If not, a connection could be opened from the arms to Otter Pond and associated tidal sloughs, admitting water with higher salt content.

As we suggested 17 years ago (Bishop et al, 1987), ditch-grass ponds are extremely valuable wildlife habitat, and are rare features on the Mendenhall Refuge. Since our 1987 study, Impact Pond (5 acres of ditch-grass pond on the north side of the runway) has been completely filled. We support this action, as well as proposed elimination of ditch-grass in the shallow lagoons of Floatplane Pond area. We also feel that ditch-grass ponds should be at the top of the list of mitigating actions elsewhere on the Mendenhall Refuge. They are obviously possible to create; we’ve done it repeatedly quite by accident.

We discuss options for mitigation ponds on page 55 of our Hotspots report.

Waterfowl hunting

We discuss waterfowl hunting and its implications

Fig 19 Bird habitats near Juneau Airport facilities, ranked from most to least attractive

habitat	heron	wtfowl	gull	eagle	corvid	total
shallow lagoon	3	3	3	1.5	1.5	12
tidal mudflat and slough	3	3	3	1	1.5	11.5
Mendenhall River	2	3	2	1.5	1.5	10
freshwater stream	3	2	2	1	1	9
deep lagoon	1	2	1	1	1	6
sedge low marsh	1	3	1	0.5	0.5	6
seeded grass	0	1	2	0.5	0.5	4
grass high marsh	1	1	1	0.5	0.5	4
diverse “uplift meadow”	1	1	1	0	0.5	3.5
asphalt	0	0	1	0.5	0.5	2
deciduous brush	0	0	0	0	0.5	0.5
closed conifer forest	0	0	0	0	0	0

Fig 20 Central Floatplane Pond Woodland, Oct 8, 2002, taken on flight with USFWS. Fall color shift distinguishes spruce from deciduous cover. East and west arms (“finger ponds”) support ditch-grass, highly attractive to grazing birds, especially in spring. If this habitat is eliminated in the interests of plane safety, we should try to create similar habitat at greater remove from the airport.



for airplane safety on page 57 of our Hotspots report. We only wish to reiterate here that hunting has created safety issues at JNU, and that improvements are needed in management of hunting on the Mendenhall Wetlands.

Hunting is a long-established tradition on Mendenhall Refuge and was one of the missions of its founders. The refuge is especially important as a place for young people to learn hunting skills, an area easily accessible for those who lack the means or time to travel to more remote locations. We do not oppose bird hunting. But we agree with Cain *et al.* (1988) that creation of closed areas at some distance from the runway could draw birds away, and possibly even improve hunting in those areas nearby that remain open. It might also reduce the need for so many waterfowl to take refuge on Auke Lake. Logical places to consider hunting closures would include the areas we’ve identified as possible sites for created ditch-grass ponds. For maximum benefit to birds and airport safety, such sites should be dog-free.

Proposed relocation of Duck Creek

Airport plans call for relocation of the current channel of Duck Creek to the northern edge of Duck Triangle. The southern portion would then be paved over

to provide expanded tie-down space. In addition to the need for growth of airport facilities, an often-cited rationale for channel relocation is the elimination of a bird attractant.

As Wilmoth (2001) discusses, however, proposed relocation of the mouth of Duck Creek to a point slightly farther upstream on Mendenhall River would not clearly reduce the bird strike potential at JNU. More can be done to improve safety by altering riparian habitats than by changing the location of airport streams. We believe that creative habitat alterations can discourage birds of concern while retaining key features of fish habitat. Scenarios for stream-margin habitat alterations are discussed on page 54 of our Hotspots report. Here we describe particulars of the habitats within Duck Creek Triangle, in regard to both safety issues and the loss of land-bird habitat. For further information on this area, and on the implications of channel relocation, see Carstensen (1996).

Southwestern (downstream) margins of Duck Creek are flooded on extreme high tides that extend well above the Radcliffe culvert. A thin belt of Lyngbye sedge borders the creek on inner terraces, but otherwise the vegetation consists of high marsh species like hairgrass and silverweed. Because salinities are much reduced by fresh water here, species like shooting star and spikerush, not usually part of the high marsh, join the hairgrass in the area along Duck Creek just below extreme high water. This unusual species mix is not especially attractive to waterbirds. Only the Lyngbye sedge belt and small amounts of ditch-grass in the bed of lowermost Duck Creek serve to lure occasional mallards. Ducks were never seen upstream in the vicinity of D3 where encroaching shrubs make takeoff difficult.

The current, dredged bed of Duck Creek within Duck Triangle is primarily coarse sand, excessively well drained.

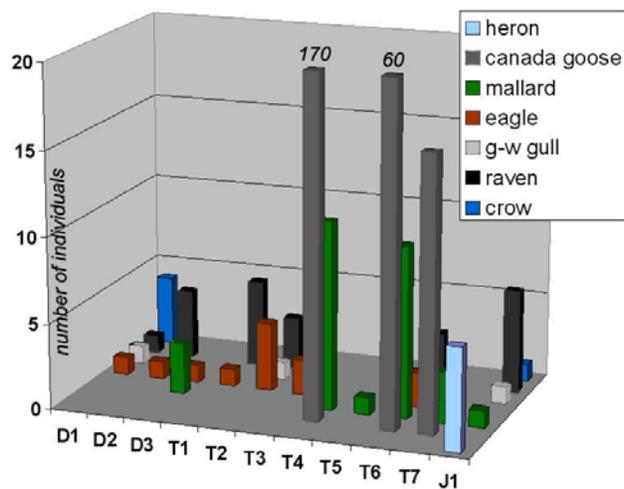


Fig 21 Birds of concern. Number recorded during 2002 on 11 point count sites. Locations of count circles are shown in fig 1. High counts at T4 and T6 are Canada Geese feeding on ditchgrass in April in the west and east arms, respectively, of the floatplane pond. The only herons observed on count circles in 2002 were at Jordan triangle.



Fig 22 Duck Creek Triangle. Color infrared imagery commissioned by SWCA in summer 2001.

Dewatering is common, especially in spring when salmonids are outmigrating. Northward relocation of Duck Creek, if done skillfully, would offer opportunities to improve fish habitat in one of the most damaged reaches of Duck Creek. The proposed more northerly channel, however, would almost completely eliminate the locally-uncommon deciduous habitat that supports the highest landbird densities we measured on airport property. (fig 28). A relocation would do little to reduce attractiveness to the larger birds of concern; in our experience these are already of low occurrence in the Duck triangle.

Whether Duck Creek is relocated or remains in its present channel, we recommend a fringe of overhanging deciduous alder and willow, as described and illustrated in our Hotspots report. A good model for habitat manipulation can be seen on Jordan Creek just upstream from Yandukin Drive (fig 23).

The FAA opposes salmon enhancement efforts on Duck and Jordan Creeks because this presumably attracts birds of concern. But there are many ways to enhance salmonid habitat and each of them affects bird habitat in different ways. By our subjective ranking system, anadromous streams are the 4th most attractive to birds of



concern of 12 JNU habitats (fig 19). In their present configuration they are highly attractive to heron, moderately attractive to mallards (but not geese), and moderately attractive to Glaucous-winged (not Mew) Gulls, eagles, and corvids.

Great blue heron, for example, prey more successfully on sticklebacks than on juvenile salmonids. (Butler, 1997) Altering a stream in ways that favor salmonids over sticklebacks (increased flow and shade, reduced backwatering) will reduce activity by herons. Herons currently using Jordan Creek Triangle may well be less drawn to salmonids than to sticklebacks and long-tailed voles, both of which were increased by tree removal.

Deciduous songbird habitats

Comparing our JNU breeding bird data to that of Gende and Willson (2001) for streams with mature coniferous context (fig 25), the airport emerges as a great place for “brush birds:” kinglets, robins, warblers and sparrows. These small songbirds are rarely implicated in damaging air strikes, and their presence is compatible with airport safety.

Deciduous brush habitat is early successional. It is much less common in Southeast Alaska than coniferous forest. Examples of deciduous habitats include: avalanche chutes, corridors of larger streams and rivers, clearcuts where severe soil disturbance favors alder seed germination, recently deglaciated areas, and coastal fringes, especially along uplifting coastlines.

While scattered deciduous trees and shrubs are common along Juneau’s coastlines, development has removed most of those patches large enough to attract large numbers of breeding birds or “stopover” migrants. Duck Creek Triangle and the Floatplane Pond Woodland are outstanding in this regard.

Fig 23 Jordan Creek upstream from Yandukin Drive, February 2003. This reach should be a model for habitat manipulation efforts within Airport property. Densely overhanging deciduous foliage makes this habitat difficult to use for birds of concern. Few of these trees will ever grow high enough to obscure views from the tower. In summer, the alders and willows shade the stream, cooling water temperatures. Root systems help bind the banks and provide overhanging cover for rearing salmonids. Leaf litter into the stream is the food base for invertebrates that feed young fish.