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CABINS, WATERFOWL, AND PUBLIC USE ON TRADING BAY, SUSITNA FLATS, AND PALMER HAY FLATS STATE GAME REFUGES

Problem Assessment and Management Recommendations

Alaska Department of Fish and Game

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INTRODUCTION

Prior to and since statehood cabins have been constructed in coastal areas of Cook Inlet for commercial fishing, trapping, waterfowl hunting and other purposes. In 1976, the state legislature designated large portions of the coastal zone of Cook Inlet as State Game Refuges. Continued construction of cabins on refuges has developed into a major legal issue and raised increasing concern over management of waterfowl habitat. This report provides relevant information on waterfowl habitat values and the occurrence of cabins on Trading Bay, Susitna Flats and Palmer Hay Flats State Game Refuges, to be used in developing cabin policy and management plans. This report should be used with supplemental maps of the refuges, with preliminary habitat types, waterfowl use zones and cabin location overlays, available for inspection from the Waterfowl Coordinator in Anchorage.

OCCURRENCE OF CABINS

Construction of private cabins on public lands around Cook Inlet began at least as early as the mid-1940s. At statehood, there were about 35 to 40 private cabins on Susitna Flats, one on Palmer Hay Flats and probably one or two on Trading Bay. In 1977, ADF&G documented 169 cabins on the coastal portions of the refuges, 17 in Trading Bay, 144 on Susitna Flats and 8 on Palmer Hay Flats. Of these, two occurred on private land, two appeared to be used for commercial fishing and 14 were used for recreational or other purposes in Trading Bay; on

Susitna Flats 42 occurred on private land, 5 appeared to be used for commercial fishing and 97 were for recreational or other purposes; on Palmer Hay Flats all 7 cabins were used for recreational or other purposes. In 1984, a partial cabin inventory was conducted and at least 196 cabins were documented, 20 in Trading Bay, 168 on Susitna Flats, and 8 on Palmer Hay Flats. In Trading Bay, two were on private land, four appeared to be used for commercial fishing and 14 were used for recreational or other purposes. On Susitna Flats, 44 were on private land, 10 appeared to be used for commercial fishing and 114 were used for recreational or other purposes. On Palmer Hay Flats all 8 cabins were used for recreation.

At least 39 cabins have been built or completely remodeled on the refuges since 1977, four in Trading Bay and 32 on Susitna Flats, and 12 have disappeared through deterioration, two on Trading Bay and ten on Susitna Flats. New cabin construction has been sporatic in Trading Bay Refuge, but has been intensive in the Theodore-Lewis River area, Lewis River Slough and east of the Susitna River on Susitna Flats.

HABITAT ASSESSMENT

Habitat Types

The moderately broad habitat/plant community types described in Sellers' (1979) report were selected for this analysis because they are relatively easy to identify and map, and they correspond to the

scale and detail of waterfowl survey data. The habitat types described below were delineated on the references maps from 1973 black and white , 1:15,840 scale aerial photography of Trading Bay, 1977 true color, 1:15,840 scale photography of Susitna Flats and 1:63,360 scale color infrared photography of Palmer Hay Flats. Type boundaries can be adjusted as additional habitat characteristics and more detailed photography become available.

Tidal Flats (TF) extend toward the inlet from about mean high tide line and consist of exposed mudflats vegetated only by algae.

Puccinellia-Triglochin (PT) Community is located just inland from mean high tide line and is dominated by patches of creeping alkali grass (*Puccinellia phryganodes*), clumps of large alkali grass (*Puccinellia grandis*) and seaside arrow-grass (*Triglochin maritimum*) interspersed with patches of mud often colonized by slender glasswort (*Salicornia europaea*), spurry (*Spergularia canadensis*), sea blight (*Suaeda depressa*) and algae. Other important plants in this community are goose tongue (*Plantago maritima juncoides*), Pacific silverweed (*Potentilla egedii grandis*) and sea milkwort (*Glaux maritima*). Recently exposed mud, such as where ponds were drained by tidal guts (e.g. parts of Stump Lake west of the Susitna River) often support nearly pure patches of creeping alkali grass.

Ramenski sedge - shallow pond (RS) Community begins further inland where Ramenski sedge (*Carex Ramenskii*) gains dominance over the

Puccinellia-Triglochin community. Clumps of seaside arrow-grass are often scattered in the RS community. Ponds within this habitat are shallow (generally less than 2 ft) with sharply defined shorelines, little emergent vegetation and usually unvegetated bottoms. Near the interface with the marsh community, ponds are deeper and have four-leaf mare's tail (*Hippuris tetraphylla*) and may support pondweed (*Potamogeton filiformis*). Slightly elevated ground, such as banks of tidal guts and edges of oxbows, are vegetated by grass-forb communities featuring beach rye (*Elymus arenarius mollis*), bluejoint (*Calamagrostis canadensis*), blue grass (*Poa eminens*), red fescue (*Festuca rubra*), Pacific silverweed, Arctic daisy (*Chrysanthemum arcticum*), wild iris (*Iris setos*), squirrel-tail barley (*Hordeum jubatum*), lupine (*Lupinus arcticus*), beach lovage (*Legusticum scoticum*), wild celery (*Angelica lucida*), shooting star (*Dodecatheon pulchellum*) and *Saussurea nuda*.

Marsh (M) Community is a diverse interspersion of wetland, wet meadow and grass-forb communities. Waterbodies vary from shallow ponds to small lakes, and are characterized by indistinct shorelines with a fringe of emergent vegetation. Many of the smaller wetlands are nearly covered by emergents, the most prevalent being sedges (*Carex* spp.), creeping spike rush (*Scripus paludosus*), four-leaved mare's tail and bulrush (*Scripus validus*). Many ponds support submergents including pondweeds (*Potamogeton* spp.), horned pondweed (*Zanichellia palustris*), water milfoil (*Myrophyllum spicatum*) and wigeon grass (*Ruppia spiralis*). Wet meadows are inundated by high tides (+32 ft)

several times during the year. Plants growing here (sedges, silverweed, goose tongue, and seaside arrow-grass) are tolerant of saturated alkaline soil conditions. Drier sites have grass and forb species as described for the RS community.

Shrub-bog (SB) Community is the least affected by tidal flooding and covers the largest area on the refuges. It extends inland from the marsh community to where elevation and drainage allow upland plants to grow. Ponds within this habitat are generally deeper and have distinct, though often floating, shorelines and little aquatic vegetation. The shrub-bog community is poorly drained, but thickly vegetated. Important plants include sweet gale (*Myrica gale*), dwarf birch (*Betula nana*), Arctic dock (*Rumex arcticus*), water hemlock (*Cicuta douglasii*), cotton grass (*Eriophorum spp.*) bluejoint, marsh five fingers (*Potentilla palustris*), and buckbean (*Menyanthes trifoliata*). Slightly drier sites have willow (*Salix spp.*), black spruce (*Picea mariana*), heaths (*Ledum* spp.) and bog laurel (*Kalmia* spp.).

Seasonal Waterfowl Habitat Use

Data on the use of refuge habitats by waterfowl are from aerial surveys flown 1975-78 (Timm 1976, Sellers 1979), ground surveys in 1978, an aerial swan nest survey in 1984, and observations of biologists over the past 10 years. A discussion of general use patterns and importance to waterfowl by habitat type follows.

Tidal Mud Flats (TF) are used most intensively by shorebirds and waterfowl in spring and fall. Migrant ducks and geese roost on exposed mud during spring and green-winged teal and wigeon feed on available invertebrates along tide guts. Although waterfowl use of mudflats is relatively low, use by ducks increases in August, and many birds seek refuge there and on Cook Inlet waters after hunting season opens.

Puccinellia-Triglochin (PT) habitat is most valuable as preferred feeding habitat for migrant snow and cackling geese in spring. Lesser Canadas and white-fronted geese use this and other habitats about equally. Ducks use PT areas opportunistically, when infrequent high tides create shallow water feeding areas. This and the RS zone are used extensively by shorebirds during spring and fall migrations.

Ramenski Sedge (RS) habitat, like PT is used most by spring and fall migrants, especially feeding and roosting geese. Nesting is minimal in this zone because periodic tidal flooding flattens vegetative cover and poses a threat to nests. This zone contains numerous semipermanent ponds that attract migrant ducks and are used throughout the summer by resident dabbling ducks for brood rearing.

Marsh (M) is undoubtedly the most valuable habitat type for most waterfowl throughout the year. During spring and fall, the numerous permanent ponds and interspersed cover are the primary staging habitat of tundra swans that feed on aquatic vegetation, and loons, grebes and

diving ducks that use fish and benthic invertebrates. Marsh habitat is also the most productive nesting habitat for resident lesser Canada and Tule white-fronted geese, ducks, loons, grebes and gulls. Unlike the lower TF, PT and RS zones that are subjected to periodic flooding, the Marsh floods only on the highest tides (32+'). This zone provides safe nest sites in the residual cover from the previous year, in combination with the productive feeding and brood-rearing habitat of the ponds. Nesting waterfowl seem especially attracted to cover at the Marsh/Shrub Bog interface.

Shrub Bog (SB) habitat type is the most abundant, but least valuable to waterfowl on Cook Inlet refuges. Although shrub bog areas contain numerous deep permanent ponds, the waters are acidic and low in productivity. SB wetlands host few birds during spring and fall, and support low densities of nesting diving ducks and mallards. During fall, Canada and tule geese use SB as well as other habitats for night roosting. The most significant aspect of SB habitat is the concentrated nesting of ducks, geese and cranes at the interface with marsh habitat. Trumpeter swans that nest within shrub bog areas choose sites near flowing waters or more productive ponds that are somewhat atypical of this habitat class.

CORRELATION OF CABINS AND WATERFOWL HABITAT

The occurrence of cabins in various habitat types is presented in Table 1. The distribution of cabins, both among habitat types and

geographically, within the refuges is a function of (1) the extent to which access is limited to specific sites, (2) proximity to local resources (ducks, fish, etc.), and (3) special requirements for specific uses of sites (moorage for fishing boats).

Cabins used for commercial fishing are clustered where fishing permits are held and where access is possible with a moderate-size boat (i.e., Middle, Beluga, Theodore, Ivan and Susitna Rivers). These cabins are found either upriver in shrub bog habitat or in PT habitat near river mouths (Table 1, maps). Because SB is marginal waterfowl habitat and PT is used by waterfowl primarily in April and May before fishing activity begins and in late summer and early fall by geese, the traditional patterns of use at these cabins probably has had little impact on waterfowl. In 1982, ATV activity, some associated with commercial fishing, was restricted to existing roads and within 1/8 mile of high tide mark on Susitna Flats.

About 70% of the cabins on Trading Bay and Susitna Flats State Game Refuges and all of the cabins on Palmer Hay Flats are for uses other than commercial fishing and are on public lands. Because most of these are "duck shacks," their distribution reflects convenient access and proximity to good hunting areas. Overall, 46% of these cabins are located within marsh habitat that is the most attractive to ducks. Another 45% of these cabins are on adjacent RS and PT habitat that is of secondary importance to waterfowl.

At Trading Bay, the relatively few hunting cabins are clustered at the mouth of MacArthur River and on Seal Slough where floatplane access is convenient in lakes. On Susitna Flats access is more variable, creating different cabin distributions across the refuge. At Seely Lake, Lewis River Slough, Swan Lake and Big Island access is limited to suitable floatplane lakes and, except at Big Island, cabins are numerous.

Natural drainage of Stump Lake is making floatplane access unreliable. Along the Theodore and Lewis Rivers, and much of the area west of Susitna River, wheelplanes can land on the oilfield road system connected with Beluga which has increased access for cabin owners and day-hunters alike. In these areas, access is broader and cabins are more dispersed. New cabins along the road system have appeared particularly in the Lewis River and Stump Lake areas. Between the Susitna and Little Susitna Rivers there is broad access by floatplanes along the marsh, and by wheelplane along slough banks, and, therefore, more dispersed cabin distribution. Areas east of the Little Susitna are widely accessible by wheelplane, small floatplane, or boat.

All of the cabins on Palmer Hay Flats are located in the west Coffee Point/Rabbit Slough area in the center of the refuge. This area is relatively remote compared to the rest of the refuge and access is limited. While float plane or wheel plane access to these cabins is possible, current access is primarily by boat on either Rabbit Slough or the Matanuska River/Knik Arm. Boats will probably continue to be

the major form of access to these cabins as the use of motorized vehicles on the refuge for waterfowl hunting was restricted in the spring of 1985.

CONCLUSIONS

The department's focus, in dealing with cabins on state lands, must be on existing or potential impacts on biological resources. The actual causes of impacts are not cabins per se, but the types and levels of human use throughout the year. Currently, most of the human use associated with cabins occurs in the fall in conjunction with the hunting season. Although the present levels of specific impacts on waterfowl and other resources is not well documented, public reports and other circumstantial evidence suggests that hunter success and the quality of recreational experiences, have both declined somewhat as the number of refuge users associated with cabins has increased.

It is our assessment that, under present seasonal use patterns, the number and density of cabins on Susitna Flats, Trading Bay and Palmer Hay Flats State Game Refuges has not caused measurable long-term biological impacts on waterfowl or habitat resources. Furthermore, cabins are appropriate on these refuges to maintain reasonable public access and use, as long as their availability and use is managed under a plan that will alleviate user and resource conflicts. If existing oilfield roads on Susitna Flats are connected to the road system in the future, most cabins on the area would become superfluous.

Table 1. The approximate number and distribution of cabins on private lands, commercial fish sites and for other purposes (duck shacks) in various habitat types on Trading Bay, Susitna Flats and Palmer Hay Flats State Game Refuges.

1977	Private	C. Fish	Other	Total	(%)
Forest	2	1	1	4	(2.4)
Shrub bog	1	1	5	7	(4.1)
Marsh	4	0	62	66	(39.1)
Ramenski Sedge	14	2	29	45	(26.6)
Puccinellia-Triglochin	23	3	21	47	(27.8)
Total	44	7	118	169	(100.0)
1984					
Forest	2	3	3	8	(4.1)
Shrub bog	1	6	10	17	(8.7)
Marsh	6	0	68	68	(34.7)
Ramenski Sedge	12	1	36	49	(25.0)
Puccinellia-Triglochin	25	4	25	54	(27.6)
Total	46	14	136	196	(100.0)

Since 1970, the population of the Anchorage Borough has increased by over 93%. During the same period waterfowl hunting pressure (hunter-days) has increased by 43.8% on Susitna Flats, 76% on Trading Bay and over 40% on Palmer Hay Flats. Statewide, the number of active waterfowl hunters has increased only 8.3% in the past 10 years. These data indicate that hunters are spending more time hunting in the Cook Inlet area, and that the number of hunters is increasing more rapidly in Cook Inlet than elsewhere in the state. A long-term decline in daily hunter success (as an indicator of waterfowl availability) can not be detected for the Cook Inlet area, but on Susitna Flats average daily success for the past two years has been the poorest since 1971. Although hunter success is dependent on weather, local migration patterns and waterfowl populations, hunter activity, especially day-use, has been visibly more intensive.

Because of the growing probability of unacceptable biological impacts and the peripheral problems of user conflicts, air traffic incidents and legal disputes on all state lands, stronger regulation of cabins and public use is both practical and necessary at this time. Considerations in regulating the number of cabins and levels of use on state game refuges must include the need for public access, location and distribution of cabins, effects of seasonal use, acceptable types of uses, and the economics of a public cabin program.

Commercial fishing cabins on state lands are few in number, located in lower value waterfowl habitats and are usually not used during periods of intensive waterfowl activity. However, the availability and use of these cabins for hunting and other non-fishing activities needs to be evaluated.

Cabins used for waterfowl hunting have proliferated substantially since 1970. The majority of these cabins are found in high and moderately high value waterfowl habitat. Although use of these cabins is presently limited seasonally, with little impact to spring migrants and resident nesting waterfowl, intensive use during hunting season displaces birds to less preferred habitats, especially where cabins occur in marsh habitat. As cabin distribution has become wider and their use has gradually increased, the potential detrimental effects on birds from displacement and disruption of feeding and resting has increased. The following management recommendations are intended to protect waterfowl and other valuable wildlife resources, maintain hunting opportunities and other public uses while addressing growing management problems.

RECOMMENDATIONS

The following recommendations are based on proposed policies for all state Special Areas, as well as the information from Cook Inlet in this report. Although control of cabins and associated use is one measure to regulate human activity, we also include other regulatory steps that are advisable now or in the future as conditions change.

1. The new personal use cabin permit program instituted by the Departments of Natural Resources and Fish and Game is intended to provide for and increase public use while phasing out private use cabins. It is recommended that this be accomplished by the following actions.

   a. No new private or personal use cabins should be permitted on Cook Inlet refuges.

   b. Since current data does not indicate that existing cabins are creating a measurable long-term biological impact on waterfowl or habitats, permits should be issued for cabins in Trading Bay, Susitna Flats and Palmer Hay Flats that meet the requirements set forth in AAC 65.010-.035. Over time, these cabins will be removed or converted into public use cabins through attrition or non-renewal of permits. Should additional information on the impact of cabins on the waterfowl resources or habitat become available, removal of cabins from some areas may be warranted in the future.

   c. A public-use cabin program be initiated immediately according to the following principals.

      (1) A public-use cabin system should be established through acquisition of existing cabins (unclaimed or permit

attrition) or where justified, construction of new public cabins. Recommended distribution of these cabins is outlined in Table 2.

(2) The location, number and regulated use of all cabins should be incorporated into refuge management plans, and should be based on criteria of (1) habitat quality, (2) fish and wildlife use patterns, (3) safe and reasonable access, and (4) desired patterns and types of public use.

(3) The recommended array of public cabins (Table 2) would result in a moderate to substantial reduction in the number of cabins on portions of Susitna Flats, with the addition of a small number of coastal cabins in Trading Bay and several inland cabins in both refuges. On the coastal flats, clusters of cabins should be created to (1) localize access, disturbance and habitat degradation, (2) provide areas of relatively little disturbance to waterfowl between clusters, (3) maintain a variety of hunting opportunities with varied levels of hunter effort, and (4) allow efficient cabin maintenance and administration.

(4) Eventually, many public cabins should be located around existing access points or in lower value habitats (e.g. shrub) where reasonable access can be maintained.

(5) Use of public and personal-use cabins should be controlled seasonally to minimize the impacts of disturbance on migrating and nesting waterfowl. Spring and summer use for wildlife observation, fishing and other compatible activities may be permitted at designated sites. Cabins should not be permitted within one-mile of trumpeter swan nests.

2. Develop regulations and implement a plan to control aircraft landings on refuges, and eliminate aircraft harassment of waterfowl through education/enforcement programs.

3. Maintain and enforce motorized vehicle restrictions on refuges to minimize user conflicts, disturbance to nesting birds, and habitat damage.

4. Periodically evaluate waterfowl harvest data, cabin administration policy and public attitudes to review the effectiveness of refuge management. If necessary, hunting areas, hunting days and levels of public use can be adjusted through Board of Game regulations.

Table 2. Proposed future distribution of public-use cabins on Susitna Flats and Trading Bay State Game Refuges after acquisition or removal of existing cabins.

Location	No. Cabins Existing in area [1/]	No. Cabins Proposed	Siting Consideration
Susitna Flats			
West Beluga River	0	1-2	along the road
Seeley Lake West	13	4-6	on drift line south of lake
Seeley Lake East	4	2-3	on drift line south of lake
Upper Theodore RIver	0	1	
Lewis River Road	9	3-5	along the road
Lewis River Slough	12	4-6	south shore
Stump Lake Road	4	3-4	along the road
Stump Lake South	3	3-4	
Stump Lake North	5	2-3	
Big Island West	2	2-3	
Big Island East	3	2-3	
Swan Lake West	9	4-6	south shore
Swan Lake Central	4	4-6	south shore
Swan Lake East	13	4-6	south shore
Little Susitna Flats	3	3-5	
Little Susitna River	0	2	
East Flats West	5	3-5	tide gut bank
East Flats East	5	3-5	tide gut bank
	89	50-75	
Trading Bay			
Black Sand Creek	0	1	boat access
Buritlana Lake	1	1	boat access
West Beach	1	1-2	
West MacArthur Flats	4	3-5	
East MacArthur Flats	3	2-4	
Upper MacArthur River	0	1	boat access
Seal Slough	4	3-5	
Middle River	0	1-2	
Chuit Creek Slough	1	1	
Upper Nikolai Creek	1	1	
Nikolai Creek	0	1	
	15	16-24	

[1/] Number of cabins currently existing in geographical area.

LITERATURE CITED

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