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A BRIEF SURVEY OF THE TUXEDNI NATIONAL WILDLIFE REFUGE
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with photographs by the author
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A BRIEF SURVEY OF THE TUXEDNI NATIONAL WILDLIFE REFUGE

As a summer employee of the U. S. Bureau of Sport Fisheries and Wildlife the author was given the assignment of locating and photographing the major seabird rookeries of the Tuxedni National Wildlife Refuge. I was also to collect any information concerning Chisik Island's bird-life, human activities, mammals, terrain, vegetation, and history which was possible. Since I spent only a little over two days on the island relatively little information could be gathered. But even so this report contains enough general information to be of use to the first time visiter of the Tuxedni Refuge.

I left Kenai for Chisik Island, located on the west side of Cook Inlet approximately 60 miles southwest of Kenai, at 7:00 a.m. on July 19, 1966 via Andy's Flying Service. The 6,439 acre Tuxedni Refuge, established in 1909 to protect vast numbers of colonial seabirds which nest on Chisik's cliffs during the summer months, consists of all of Chisik Island excluding the Snug Harbor Packing Company. Also included in the Refuge is Duck Island located off of Chisik's east shore. Approaching Chisik from the air one is bound to notice the dark green water surrounding the island which is not at all like the brown siltwater in the head of Cook Inlet. During the summer months these waters abound in salmon and, according to some Chisik fishermen, herring, halibut, and King Crab are also present.

The Refuge's colonial seabirds are directly dependent upon the sea.

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only does the sea provide the Black-legged Kittiwake, the Refuge's main nester, with food but at low tide the sea also furnishes the Kittiwake with the important nest material — mud. Other important nesters are Glaucous-winged Gulls and Pigeon Guillemots. Murres, puffins, eiders, cormorants, and many seabirds are also present on the Tuxedni Refuge during the summer months.

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The foreground is the cliff above Chisik Island's North Point and on the left is Duck Island. Photo by Troper.

Spruce stand below the cliff at the North Point.

One's first view of the island's terrain is likely to result in a gasp. Some of the island's northernmost point, hereafter referred to as North Point, a 200-acre patch of spruce is located a few hundred feet above a small settlement. Above this small stand of spruce looms 200 feet of verticle rock. From the 2,200-foot peak in the north, Chisik's highest point, the alder-covered island slopes steeply to the south (around 2,000 feet in a half-mile). On its north-south axis, Chisik's greatest span, the island is about 6 miles long.

The island's widest place, located on an east-west axis at the foot of the 900 foot cliff, is a little over 2 and a quarter miles. Cliffs, ranging from 40 to 400 feet, rise up from the sea all around Chisik. Only the island's North Point has a beach completely void of cliffs. The cliffs consist of such soft rock as sandstone and conglomerate along with harder rock of volcanic origin. While such cliffs are excellent places to look for ammonites and fossilized mussels they present a constant danger to anyone walking Chisik's beaches at low water and not paying close attention to the incoming tide.

Jacob Edelman, a 66-year-old-plus fisherman who has wintered on the island, told me of having walked the west beach at low tide from the North Point to the cannery at Snug Harbor in nearly two hours. The beach on the western side of Chisik is mostly gravel and slippery, algae covered rocks are few. Though the west beach is good walking one must watch the tide. The west beach can be traveled only at low tide and although there are many places to easily climb above the cliffs as the tide comes in, it is still possible to be trapped against a cliff. Chisik's east beach is dangerous, especially the southern part. Slippery boulders and sharp rocks make poor walking while the steep cliffs offer few places for a hiker to escape an incoming tide. A reef is located on the island's southern most point and according to Mr. Joe R. Fribrock, owner of the Snug Harbor Packing Company, anyone on foot should be on the west side (the cannery side) of the island as the tide starts to cover the reef. Mr. Fribrock's father owned the cannery before him and as a boy Joe was trapped on the east side of the reef by an incoming tide and was forced to climb a cliff and wait for the water to drop before returning home.

A foot trail starts at the Snug Harbor Cannery and runs east past a small lake. Hiking off this trail is difficult and exceedingly slow. Mr. Fribrock

spoke of a University of Michigan student who hiked to the island's highest point by climbing the mountain from the west beach. Upon reaching the summit fogged closed-in and he was forced to fight his way south through dense alders before reaching Snug Harbor 8 hours later. Judging from my experience in Chisik's thick alders and studying the rugged terrain on both the east and west side of Chisik's peak there is no easy, or especially safe, way to reach alpine areas on foot. The alders, according to Mr. Fribrock, are covered with snow in the winter and can be hiked over. But during the summer months the most favorable way to travel from one side of the island to the other and observe bird-life is by boat.

Thanks to Mr. Jack Cremin, who has had a fishing camp on the Tuxedni National Wildlife Refuge for at least 4 years, I was able to get around the island. Mr. Cremin's fishing site is one of four located on the Tuxedni Refuge. Mr. Fribrock furnished the following information(see map):

<u>Location of Fish Site</u>	<u>Name of Owner</u>	<u>Home Town of Owner</u>
1- West Beach	Joe Munger	Silver Salmon Creek
2- North Point	Jack Cremin	Anchorage
3- North Point	Ed Edelman	Soldatna
4- North Point	Jacob Edelman	Clam Gulch

addressed

During the summer the above men can be contacted by mail/AC/C Snug Harbor Packing Company, Seldovia, Alaska. Their fishing sites include permanent structures and a small tractor which is used on the North Point to haul setnets. The above fishermen use setnets and though ~~some~~ guillemots and cormorants are caught in the nets, I doubt if the few birds lost in this manner is negatively affecting Chisik's seabirds.

The island is densely covered with alders ranging from 5 to 11 feet in height. Alders grow in deep ravines, gentle slopes, and even on large, steep talus slopes. Inbetween the alders salmonberry, elderberry, and devil's club

form a dense tangle. In open areas, which are few, grasses grow along with a few willows. A few lone spruce can be found towering above the alders but only in two areas does the spruce dominate. On the North Point a 200 acre stand of 40 foot spruce grows. Another stand of spruce, this one much smaller, grows on the west beach near the cabin. Both of these spruce stands have typical understories including devil's club and bunchberry. On the east shore of the North Point a stand of cottonwood, 40 feet in height, grows along the beach. Typical alpine vegetation is present on Chisik's summit and in areas of poor drainage muskeg vegetation can be found.

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Look north over the Tuxedni Channel to Fossil Point on the mainland. Alder-covered Chisik is on the right.

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Cottonwood, alder, and spruce trees on the North Point. Note the setnet on the beach in the foreground.

Most planes on wheels land on the beach just north of Snug Harbor Cannery. Pilots must be careful when landing since the lower portion of the beach is soft mud and gravel while much of the upper beach is steep and covered with boulders. Only the experienced should use the restricted Snug Harbor "airfield."

Snug Harbor's only store, which handles items from gloves to glue and paints to pears, also serves as a U. S. Post Office. A short wave radio is located in the store's back office. One does not need to fly-in and carry all of his food since the cannery's store is well stocked if one is willing to pay the higher prices.

Mr. Joe Fribrock, owner of Snug Harbor Packing Company, greets newcomers with a smile even if he has been without sleep for two days attempting to keep up with a flood of fish during this exceptionally good salmon season. The Fribrocks spend their winters in Seattle and summers at Snug Harbor. Mr. Fribrock, who has a geology degree, has spent many summers on Chisik and has made many interesting observations of the island's bird-life. To any visitor on Chisik Island Joe Fribrock is a source of much information, assistance, and perhaps a delicious meal.

Talking with Mr. Fribrock I learned that his cannery was built by the same Palmer after which the town of Palmer, Alaska was named. The cannery was originally constructed to process clams but became a salmon cannery supplied with fish from traps, one of which was located on Chisik Island near Duck Island. Mr. Fribrock stated that he has observed kittiwakes drive Bald Eagles into Tuxedni Channel when the eagles approach too close to the nesting cliffs. The kittiwakes dive at the eagle with some gulls grabbing eagle feathers when the opportunity arises. About 61 years ago, as the Fribrock family can best recall, a fellow attempted to trap falcons for the U. S. Air Force Academy. According to Mr. Fribrock and the store manager he had a permit to trap falcons, however was unsuccessful although he observed falcons on the island and located an eyrie on the large cliff across Tuxedni Channel from Snug Harbor.

Asking Mr. Fribrock what birds he knew to be present on the island he mentioned, besides the seabirds; Bald Eagles, Gryfalcons, Violet Green Swallows, Golden-crowned Sparrows, ravens, magpies, hummingbirds, and hawks. Mrs. Fribrock informed me that she has never seen a robin on Chisik though they are common on the mainland. The Fribrocks also reported mice, shrews, and weasels are present on the island and moose and bear have also been observed. At least one brown bear has been shot near the cannery in fall. At low tide a strip of water less than a mile separates Chisik Island's western most point from the mainland near Fossil Point. In winter, according to Mr. Fribrock, Tuxedni Channel freezes over. Though the crossing of bear and moose from the mainland to the island is possible, such crossings are undoubtedly rare. At present no bear or moose are known to be on the island. I was told that beaver had been brought to Chisik by the cannery but they did not survive. A young boy was the source of the preceding information but unfortunately he was the only one who knew anything about the beavers. Possibly the cannery had hoped that beaver ponds would provide water.

The main natural attractions of this wildlife refuge are Chisik's cliffs and bird-life. Both of these features are combined in the nesting cliffs of the colonial seabirds. The main rookery, Rookery # 1 (see map), is located slightly south of the cannery at Snug Harbor and extends around to Chisik's eastern shore. While Gabrielson (1943, 57), who visited the island in July of 1940, states that this rookery is "at least two miles in length" I would estimate the rookery's size nearer to one and a half miles in length. Whether the rookery has actually changed in size or just a difference in estimations exists, one can only guess. The rookeries of the Tuxedni Refuge are not a constant size. Mr. Fribrock mentioned the kittiwake rookery located just north of the cannery which he observed die-out over a period of years (Rookery D on map).

... rock there as that the rookery became too small for successful nest-
ing. Presently, Glaucous-winged Gulls nest in the area that was once a
kittiwake rookery.

The appearance of Rookery # 1's cliff is similar to the other three former
kittiwake rookeries. The cliff consists of many distinct rock strata tilted
at an angle of thirty to thirty-five degrees. Some rock layers are more soft-
ly eroded than others and in these eroded layers the majority of the black-
legged Kittiwakes build their roosts and nest sites. The eroded stratum
runs the face of the cliff with the harder upper stratum giving the kittiwakes
something of a roof and the harder stratum below providing a floor. Below slopes,
especially ones covered with vegetation, serve as convenient places to
ascend from which to observe kittiwakes.

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part of the main rookery, Rookery # 1. At low tide the water comes up to the level of the rocks.

Black-legged Kittiwakes on the ledges of Rookery # 1 south of Harbor.

Rookery # 1 is not continuous for a few areas exist along the cliffs

face where kittiwakes are few and absent. One can only guess whether or not these breaks in the rookery are of any significance to the bird's social organization. Five Horned Puffins were observed high in the cliff in the area on the west side of Rookery # 1 where few kittiwakes nest. Glaucous-winged Gulls nested on the cliff tops above the Black-legged Kittiwakes.

The cannery's store manager, one of the two men who winter at the cannery, stated that the kittiwakes arrive within a few day period around March 17. The birds are rarely more than a week early or late. Early in October the kittiwakes leave the island. In the spring, according to Mr. Fribrock, the kittiwakes will wait for an unusually low tide before building their nests. Late comers get their mud from a small fresh water lagoon 200 yards south of the cannery. When the low tide comes a constant stream of birds can be seen going and returning to the nesting cliff. The kittiwakes, with grass in their bills, fly to the mudflats and roll this grass in the mud. The birds keep making trips to the mudflat until enough material is collected and the nests are completed.

Opposite Rookery # 1 a stream pours into the Tuxedni Channel. A Bald Eagle nests near this stream and at low tide kittiwakes can be observed congregating at the stream's mouth.

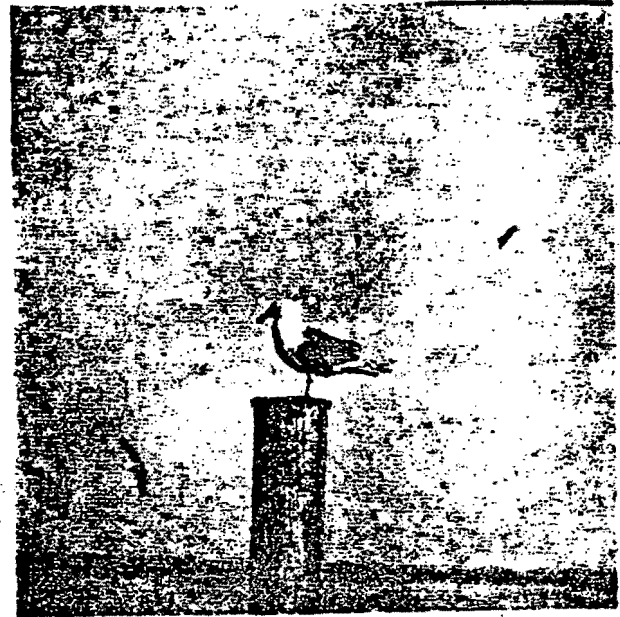
Alder-covered Chisik Island offers excellent cover for many species of Passerine birds during the summer months. I saw Pine Grosbeaks, Golden-crowned Sparrows, and a small yellow warbler which could not be positively identified. Mr. Fribrock and Mr. Cremin both reported that the Willow Ptarmigan and Spruce Grouse are present on the Refuge. The Spruce Grouse is limited to a small stand of spruce trees on the North Point while the Willow Ptarmigan finds much of the island offering usable habitat.

Other birds observed include a Lesser Yellowlegs feeding in the small lagoon south of the canery, a Peregrine Falcon hunting above a cliff near the North Point, and a family of Common Ravens at the North Point.

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Common Ravens which nested near the North Point.

Glaucous-winged Gull at Snug Harbor.

None of the three kittiwake rookeries on the east side of the Refuge are as large as the main rookery covering the island's southern most point. Rookery # 2 (see map) includes many of the cliffs along Duck Island's shoreline but since these cliffs are not as extensive as those of Chisik this rookery is small in comparison. The waters off the east shore of Chisik, especially around Duck Island, abound in bird-life. Mr. Fribrock mentioned that gulls nest on the ground at Duck Island. Passing Duck Island I noticed, besides kittiwakes and Glaucous-winged Gulls nesting; Common Murres and Pigeons were also perched on the large rocks along the shoreline and on the island proper.

Mr. Fribrock reported the eider nesting on Chisik Island (probably the

(Elder). I noticed nine female elders with young along Chisik's east shore. The Double-crested Cormorant is common off the east shore and Murie, who briefly visited the island in 1938, found it obviously ready to nest (Gabrielson and Lincoln: 1959, 94). Gabrielson, on July 28, 1940, found a few pair of Tufted Puffins breeding on Chisik (Gabrielson and Lincoln: 1959, 51) and while I noted a few Tufted Puffins its cousin, the Horned Puffin, was much more common. The Pigeon Guillemot is very abundant along the east shore. This species may very well nest on Duck Island judging from the numbers of Pigeon Guillemots I noted there. In 1940 Gabrielson found the Pigeon Guillemot obviously nesting at Chisik associated with murre and Kittiwakes (Gabrielson and Lincoln: 1959, 165-6). The Common Murre is also present along the east shore and Gabrielson noted this bird on July 28, 1940 (Gabrielson and Lincoln: 1959, 175).



Kittiwake with two young.

Kittiwake on its young on rocky shore.

Rockery # 3 is a good size Kittiwake rockery with Glaucous-winged Gulls

nesting on the cliff's top. This rookery is similar to # 1 both in the presence of nesting gulls and in the location of the majority of nests on ledges. Rookery # 4 is smaller than # 3 but is still a good size nesting colony. A few Glaucous-winged Gulls were noted above the kittiwakes. In each of the Refuge's four Black-legged Kittiwake rookeries the eggs had hatched and the downy young, usually one or two, could be found in practically every nest.

At 11:00 a.m. on July 21, 1966 Andy landed for the return flight to Kenai and an all to brief visit to Chisik Island ended. The Tuxedni National Wildlife Refuge is unique. Located in a wilderness known mainly to a few fishermen during the summer months, the Tuxedni Refuge is still largely unstudied. Its rugged terrain and colonial seabirds offer a spectacular sight not easily forgotten.

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