Overview of the Taku River Tlingit Habitat Suitability Models

The Taku River Tlingit First Nation (TRTFN) have developed habitat suitability models for important wildlife species, to provide strategic level information about where important habitats are distributed across their Territory, and inform management and planning efforts. For the planning work being undertaken through the Framework Agreement, the TRTFN and BC will utilize habitat suitability models being jointly developed, which will incorporate the foundational work of the habitat modeling efforts undertaken by the TRTFN.

As all modeling efforts, the TRTFN's ability to model the seasonal habitat of focal species habitat is limited by knowledge of seasonal habitat use patterns, the likely variability in those patterns across the Territory and between years, and the availability of applicable environmental data for the region. The traditional and indigenous ecological knowledge (TIEK) of the Taku River Tlingit, as well as local ecological knowledge, provided key information on the distribution, ecology, and habitat use patterns of each species. The TIEK information was corroborated and supplemented using other existing information on each species, including research and other modeling efforts in similar regions. By combining TIEK and local knowledge with scientific research information, the TRTFN habitat models represent a powerful combination of these two forms of ecological knowledge. In addition, the TRTFN obtained a limited set of radio-telemetry locations spanning between five and nine months, collected by the BC government in a three-plus year radio-telemetry project, and was used to provide some model validation.

The habitat models uses standardized spatial data that are available through the BC government, including the BC Forest Cover data and Biogeoclimatic Ecosystem Classification for vegetation information; BC Terrain Resource Information Mapping database (TRIM, 1:20,000) for roads and topography, the BC Watershed Atlas (1:50,000) was the source for data related to rivers and streams, and the Fisheries Information Summary System (FISS) was used to complement TIEK in determining salmonid species distributions and spawning areas.

Moose in the Taku River Tlingit Territory

Moose are a principal source of meat for many TRTFN citizens as well as other local residents, and there is significant concern about moose populations in the vicinity of Atlin. This concern stems from the high hunting pressure from multiple sources, particularly in areas with vehicle access. Widespread declines of moose through the Southern Lakes region of the Yukon and British Columbia has resulted in the recent discussions between a variety of management agencies within government and First Nations.

Taku River Tlingit traditional and indigenous ecological knowledge (TIEK) and other local interviews identify moose as closely associated with habitats that support lush willow growth, as well as other shrubby and herbaceous plants that they forage upon. Wetland habitats, including marshes, river sloughs and "weedy" lakes are used heavily, as are higher elevation (subalpine and alpine) willow patches. Burns and other open, shrubby habitats were identified as important for moose. Moose use forest cover throughout the year, but particularly during fall rutting for protection, and during the winter to escape deep snows.

Winter Moose Habitat

Traditional and indigenous ecological knowledge of moose indicates that there is a limited diversity of foraging opportunities during the winter and spring seasons. Early winter habitats were described as higher elevation shrubby habitats, and these were identified as both warm aspect young seral stage forests and alpine tundra adjacent to the security of forests. Warm aspect, open habitats are also used by moose in the spring, as green up proceeds following snow melt. Most highly rated of these is alpine tundra within 200 m of forest cover. It was assumed that alpine tundra habitats greater then 2 km from forest had little or no value for moose. In mid- to late winter, deep snows may drive moose to lower elevations. Low elevation habitats associated with aquatic habitats are also important in the spring. Valley bottom wetland habitats and young, seral stage forests that support shrub habitats are rated high quality habitat. Valley-bottom forests were also identified as high quality winter habitats. Aspen forests are used, and are identified as good quality habitat for moose during winter. High quality security habitats were identified as mature forests (>80 years old) within 1 km of identified foraging habitats (as described above). Lower quality security habitats were younger forests that were at least 6 m high. These definitions draw upon, and are very similar to, other moose habitat modeling efforts in other regions.

Examples of Moose Habitat TIEK and Model Descriptions

TRTFN and local ecological knowledge summary	Model queries
Winter: Low elevation marshes, open areas for alder/willow	Wetland habitat and other valley bottom open, shrub habitats
Winter: High elevation open for willow until snow drives out	Alpine tundra, with highest rated within 200m of forest and no value beyond 2 km
Winter: Low elevation trees/forest	Valley-bottom forests
Spring/summer: Near water, marshes, thick aquatic vegetation or on islands (for calve protection	Wetland habitat and other valley bottom open, shrub habitats; islands
Spring/summer: Open slopes for green up	Warm aspect (S/SE-S/SW), open slopes through the subalpine, including early forest seral stages (grass/forb through shrub stages)
Security: Inside trees/inside tree-line	Security habitat: mature forests (>80 years old) within 1 km of identified foraging habitat (high value) Any forest >6m high and within 1 km of forage provide lower quality security

Atlin-Taku Planning Area: **Moose Winter Habitat Suitability Model**

Jointly Developed by TRTFN and the Province of British Columbia

Map Key

Habitat suitability

- Low
- Moderate
- High

- Taku River Tlingit territory
- Atlin-Taku planning area
- Taku River drainage divide
- Protected areas

Roads

- Paved or main roads
- Gravel or secondary roads
- Unimproved roads
- Rivers
- Lakes

0 2.5 5 10 Kms

Projection: BC Albers equal area conic
Datum: North American Datum of 1983
Data sources: TRTFN, BC WLAP, GeoGratis

TAKU RIVER TLINGIT FIRST NATION