
Appendix 5.4.9C

Clark's Nutcracker Species Account

Project Name: Blackwater
Scientific Name: *Nucifraga columbiana*
Species Code: B_CLNU
Status: Red-listed by British Columbia (BC) Conservation Data Centre;
listed as Special Concern by COSEWIC and SARA.

1.0 DISTRIBUTION

Provincial Range

Clark's nutcracker is found primarily across southern BC but also up the west slope of the Rocky Mountains as far as the north end of the Trench and along the east slope of the Coast Mountains as far north as Smithers, BC (Bird Studies Canada, 2012).

Elevational Range

Up to at least 2,600 metre (m) elevation (Campbell et al., 1997).

Provincial Context

Clark's nutcrackers are found across most of the southern interior of the province, as well as along the east slope of the Coast Mountains and along the Rocky Mountain Trench (Bird Studies Canada, 2012). They can be relatively common across the southern part of their range; however, they become increasingly uncommon towards the northern part of their range (Campbell et al., 1997). This species is limited primarily by food, as its range mirrors that of its primary food sources—several conifer species (Tomback, 1998).

Project Area:

Ecoprovince:	Central Interior
Ecoregions:	Fraser Plateau
Ecosections:	Nazko Upland
Biogeoclimatic Zones:	Sub-Boreal Spruce Sub-Boreal Pine – Spruce Englemann Spruce – Subalpine Fir Boreal Altai Fescue Alpine

Project Map Scale: project specific

2.0 ECOLOGY AND KEY HABITAT REQUIREMENTS

Clark's nutcrackers are a medium-sized land bird that have developed a mutualistic relationship with the whitebark pine and feed on only a handful of other conifer species (Tomback, 1998). Due to their dependence on only a few tree species for food, their range across BC mirrors the range of those conifer species (Bird Studies Canada, 2012). In addition, their primary food species in BC, whitebark pine and ponderosa pine, both have high annual variability in the amount of cone crop that is produced (Campbell et al., 1997). Clark's nutcrackers have adapted to this by developing

both resident and irruptive populations that are able to cope with the boom/bust food cycle by having some birds usually resident in an area but others that will fly large distances to find food sources in fall (Tomback, 1998). The whitebark pine ecosystems present along the east slope of the Coast Mountains have this variability in cone production, and the nutcracker populations in these areas likely contain fewer resident birds (Campbell et al., 1997).

Once seeds are available, Clark's nutcrackers spend much of late summer and early fall caching seeds, typically at low elevations and up to 32 kilometres (km) from the source (Tomback, 1998). These are then used as a food source for the rest of the year, except during summer when insects may also be taken (Tomback, 1998).

3.0 HABITAT USE: LIFE REQUISITES

Living (LI)

The Living life requisites for Clark's nutcracker are satisfied by the presence of suitable reproductive, feeding, and security/thermal habitat, which are described in detail below.

Reproducing (young)

Reproductive habitat provides Clark's nutcracker the ability to build a nest, incubate eggs, and raise young in safety from predators, precipitation, wind, and temperature extremes. Nests are placed in conifers between 2 m and 20 m above the ground, typically in leeward locations (Tomback, 1998). In addition, nests are typically located near the previous season's caches (Tomback, 1998). Optimal habitat is provided by conifer forest with whitebark pine stands at structural stage 6 or 7.

Feeding

Within the Project area, Clark's nutcracker feed almost entirely on whitebark pine seeds, although insects are also eaten in summer. Seeds are typically harvested when almost ripe or ripe by hammering the cone open and then caching at locations up to 32 km away to be eaten at a later date.

Security/Thermal

Conifer forests with stands of whitebark pine provide Clark's nutcracker with protection from predators, precipitation, and wind. Optimal habitat is provided by older forests, typically those of structural stage of 6 or higher.

4.0 TERRITORIALITY

Clark's nutcrackers are not territorial; however, within populations, some birds are usually resident while others are irruptive and do not remain in an area for a long period of time.

5.0 SEASON OF USE

Clark's nutcracker are present in BC only during the growing season (summer). The growing season is rated based on the habitat requirements identified in this species account and the location of the Project (**Table 1**).

Table 1: Monthly Life Requisites for Clark's Nutcracker

Month	Season*	Life Requisites
January	Winter	-
February	Winter	-
March	Winter	Reproductive/Feeding/Security and Thermal
April	Early Spring	Reproductive/Feeding/Security and Thermal
May	Late Spring	Reproductive/Feeding/Security and Thermal
June	Summer	Reproductive/Feeding/Security and Thermal
July	Summer	Reproductive/Feeding/Security and Thermal
August	Summer	Reproductive/Feeding/Security and Thermal
September	Fall	Reproductive/Feeding/Security and Thermal
October	Fall	-
November	Winter	-
December	Winter	-

6.0 HABITAT USE AND ECOSYSTEM ATTRIBUTES

Table 2 outlines how each life requisite relates to specific ecosystem attributes (e.g., site series/ecosystem unit, plant species, canopy closure, age structure, slope, aspect, terrain).

Table 2: Relationship between Terrestrial Ecosystem Mapping (TEM) attributes and the Life Requisite for Clark's Nutcracker

Life Requisite	TEM Attribute
Living (reproduction, feeding, security/thermal)	Site – site series, site disturbance, elevation, structural stage Vegetation – % cover by layer, species list by layer, structural stage modifier, stand composition modifier

7.0 RATINGS

There is an intermediate level of knowledge of the habitat requirements of Clark's nutcracker in BC and therefore a four-class rating scheme is used.

Table 3: Habitat Suitability Rating Scheme used for Clark’s Nutcracker

% of Provincial Best	Rating	Code
100% – 76%	High	H
75% – 26%	Moderate	M
25% – 1%	Low	L
0%	Nil	N

Habitat Suitability Ratings

Habitat suitability is defined as the ability of the habitat in its current condition to provide the life requisites of a species (Resources Information Standards Committee, 1999). When assigning a suitability rating for Clark’s nutcracker to a particular habitat, that habitat is assessed for its potential to support the species for a specified season and life requisite compared with the best habitat in the province (i.e., the provincial benchmark) for the same season and life requisite. Each biogeoclimatic zone, site series and structural stage (stages 1–7) is evaluated and assigned a suitability rating class based on its ability to provide the life requisites for Clark’s nutcracker for the growing season (spring, summer, and fall).

Provincial Benchmark

Ecosection: Unknown
 Biogeoclimatic Zone: Unknown
 Habitats: Conifer forest (whitebark pine)

Ratings Assumptions

1. Units with forest older than 80 years and whitebark pine present within the community will be rated up to high.
2. Units within 3 km of whitebark pine forest will be rated up to moderate.
3. Units within 32 km of whitebark pine forest will be rated up to low.

Table 4: Summary of General Habitat Attributes for Clark’s Nutcracker

Season	Life Requisite	Structural Stage	Requirements
Summer	Living (Reproduction, Feeding, Thermal/Security)	6–7	Conifer forest with the presence of whitebark pine

8.0 RATINGS ADJUSTMENTS

Mapping adjustments to habitat ratings are suggested to reflect the extent of suitable habitat, and to reflect individuals detected during field surveys and areas where habitats have been rated.

9.0 REFERENCES AND BIBLIOGRAPHY

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