Gray Jay

Perisoreus canadensis

Class: Aves
Order: Passeriformes

Review Status: Peer-reviewed **Version Date:** 06 February 2019

Conservation Status

NatureServe:	*Agency:*		
G Rank: G5	ADF&G: Species of Greatest Conservation Need	IUCN: Least Concern	Audubon AK:
S Rank: S5	USFWS:	BLM:	

Final Rank

Conservation category: **II. Red**

high status and either high biological vulnerability or high action need

Category	Range	Score
Status	-20 to 20	6
Biological	-50 to 50	-38
Action	-40 to 40	16

Higher numerical scores denote greater concern

Status - variables measure the trend in a taxon's population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing). **Score**

Population Trend in Alaska (-10 to 10) 6

Data are inadequate for detecting a short-term (2003-2015) trend (Handel and Sauer 2017); however, scientists in Alaska believe that gray jay populations may be declining (McIntyre et al. 2017). Analysis of long-term trends (1993-2015) from Breeding Bird Surveys suggest a stable trend in interior Alaska (Handel and Sauer 2017).

Distribution Trend in Alaska (-10 to 10) 0

Unknown.

Status Total: 6

Biological - variables measure aspects of a taxon's distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable). **Score**

Population Size in Alaska (-10 to 10) -10

Uncertain, but >25,000. Partners in Flight estimates the Alaskan population at 4,600,000 (95% CI: 3.2 million - 6.2 million; PIF 2019).

Range Size in Alaska (-10 to 10) -10

>400,00 sq. km. Found throughout interior and southcentral Alaska, from south of the Brooks Range to the Kenai Peninsula and the Wrangell Mountains, east to the Canadian border and west to the treeline (Kessel 1989; ACCS 2017a). Rare in southeast Alaska (Armstrong 2008).

Population Concentration in Alaska (-10 to 10) -10

Does not concentrate.

Reproductive Potential in Alaska

Age of First Reproduction (-5 to 5) -5

Can breed in their first year, but most do not breed until their second year (Strickland and Ouellet 2018).

Number of Young (-5 to 5) 1

Females lay a single clutch per year, though renesting is possible if the first clutch fails (Strickland and Ouellet 2018). Clutch size in Alaska is usually 3-4 eggs (Kessel 1989).

Ecological Specialization in Alaska

Dietary (-5 to 5) -5

Generalist omnivore and scavenger whose diet changes with seasonal availability (Kessel 1989). Feeds on arthropods, berries, seeds, bird eggs, and human food (Kessel 1989; Sieving and Willson 1998; Matsuoka et al. 2001); small mammals such as voles and shrews also seem to be an important part of their diet (Strickland and Ouellet 2018).

Habitat (-5 to 5) 1

In Alaska, gray jays are most abundant in coniferous and mixedwood forests, especially spruce forests (Isleib and Kessel 1973; Spindler and Kessel 1980; Cotters and Andres 2000a). To a lesser extent, they are also found in treed bogs, deciduous forests, and tall shrubs (Isleib and Kessel 1973; Spindler and Kessel 1980; Kessel 1989). On the Kenai Peninsula, Lance and Howell (2000) observed similar densities of gray jays in logged forest stands and in stands that were lightly or heavily infested by spruce bark beetle. In western Alaska, nests exclusively in spruce trees (Kessel 1989), though nests in hemlock, fir, and willows have been reported elsewhere (Strickland and Ouellet 2018). Nests are constructed on branches of coniferous trees, usually close to the tree trunk (Strickland and Ouellet 2018). Quinlan (1978) suggested that gray jays require mature forests (>20 years) for nesting, though additional research is needed on nesting requirements.

Biological Total: -38

Action - variables measure current state of knowledge or extent of conservation efforts directed toward a given taxon. Higher action scores denote greater information needs due of lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs). **Score**

Management Plans and Regulations in Alaska (-10 to 10) 2

Protected under the Migratory Bird Treaty Act (MBTA 1918).

Knowledge of Distribution and Habitat in Alaska (-10 to 10) 2

Distribution is well understood in Alaska. Broad habitat associations in interior, western, and southcoastal Alaska have been described during multi-species bird surveys (Isleib and Kessel 1973; Quinlan 1978; Spindler and Kessel 1980; Kessel 1989; Cotters and Andres 2000a). However, because Gray Jays nest earlier than most other species, specific habitat requirement during nesting are unknown, though anecdotal observations suggest a certain degree of specialization (Quinlan 1978; Kessel 1989).

Knowledge of Population Trends in Alaska (-10 to 10) 2

Monitored as part of the Breeding Bird Survey, though data are inadequate to detect short-term trends (Handel and Sauer 2017). Also monitored as part of localized surveys in national parks (e.g. Handel et al. 2009; McIntyre et al. 2017).

Knowledge of Factors Limiting Populations in Alaska (-10 to 10) 10

Little is known about the factors that affect populations in Alaska. Neither spruce beetle infestations nor logging seem to affect occurrence or density, perhaps because gray jays benefit from increasing edge habitat (Lance and Howell 2000; Collins et al. 2001; Matsuoka et al. 2001; Thompson et al. 2008). However, Quinlan (1978) found that this species was negatively affected by fire because it required mature forests for nesting. In some areas, densities may be limited by territorial behavior (Strickland and Ouellet 2018).

At the southern edge of its range, warmer autumn temperatures were correlated with long-term population declines, delayed breeding, and lower reproductive rates (Waite and Strickland 2006). Because gray jays store perishable food items, Waite and Strickland (2006) proposed that warmer autumn temperatures decrease winter food available by degrading food quality ("hoard-rot hypothesis"). This effect is concerning because gray jays are food-limited in the winter (Waite 1990; Waite 1991a; Derbyshire et al. 2015). In addition, warm temperatures during incubation -- which are more likely to be encountered if females breed later in the season -- have been linked to smaller clutch sizes (Whelan et al. 2016; 2017). Whether gray jays in Alaska will be similarly negatively affected by climate change is unknown, as models predict a future increase in the amount of habitat suitable (Marcot et al. 2015). In 2016, Denali National Park began the Gray Jay Ecology project to better understand habitat requirements and the effects of climate change on measures of fitness (McIntyre et al. 2017).

Action Total: 16

Supplemental Information - variables do not receive numerical scores. Instead, they are used to sort taxa to answer specific biological or management questions.

Harvest:	None or Prohibited
Seasonal Occurrence:	Year-round
Taxonomic Significance:	Monotypic species
% Global Range in Alaska:	>10%
% Global Population in Alaska:	<25%
Peripheral:	No

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