

## Ruby-crowned Kinglet (calendula)

*Regulus calendula calendula*

Class: Aves

Order: Passeriformes

### Conservation Status

NatureServe: Agency:

G Rank: BLM: IUCN: Audubon AK:

S Rank: USFWS: ADF&G:

Final Rank		
Conservation category: <b>V. Orange</b>		
V = unknown status and either high biological vulnerability or high action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status:	-20 to 20	0
Biological:	-50 to 50	-32
Action:	-40 to 40	16
<b>Higher numerical scores denote greater concern</b>		

**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
<i>Population Trend (-10 to 10)</i>	0
Uncertain. Short-term trends (2003-2015) from the Breeding Bird Survey suggest a declining population, whereas analysis of off-road surveys found no significant trend (Handel and Sauer 2017). Long-term trends (1993-2015) based only on BBS data reported an increasing trend (Handel and Sauer 2017).	
<i>Distribution Trend (-10 to 10)</i>	0
Unknown.	
<b>Status Total:</b>	0

**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
<i>Population Size (-10 to 10)</i>	-10
Unknown, but >25,000. Two subspecies occur in the state, <i>R. c. calendula</i> and <i>R. c. grinnelli</i> . <i>R. c. calendula</i> is the most widespread of the two. PIF (2019) estimates the statewide population at 9.7 million (95% CI: 7 to 13 million). Within the range of <i>R. c. calendula</i> , Handel et al. (2009) estimated that there were 215,000 individuals breeding in the Yukon-Charley Rivers National Preserve.	
<i>Range Size (-10 to 10)</i>	-10
Breeds in central and western from Cook Inlet north to the Brooks Range (Swanson et al. 2008). Replaced by <i>R. c. grinnelli</i> in southcoastal and southeast Alaska (Gibson and Withrow 2015). Range limit in northern and western Alaska likely follows the distribution of the treeline (Kessel and Gibson 1978). Most of the population overwinters further south, though it has been infrequently observed in the winter in southern Alaska (Kessel and Gibson 1978). Breeding range >400,000 sq. km.	
<i>Population Concentration (-10 to 10)</i>	-10
Does not concentrate (Swanson et al. 2008).	
<i>Reproductive Potential</i>	

<u>Age of First Reproduction (-5 to 5)</u>	-5
Breeds within its first summer (Swanson et al. 2008).	
<u>Number of Young (-5 to 5)</u>	1
Unknown for Alaska, and limited information available elsewhere. Average clutch size for R. c. calendula is 7.64 +/- 0.99 eggs (n=25) and ranges from 5-9 eggs/clutch (Swanson et al. 2008). Lays a single clutch per year (Swanson et al. 2008).	
<i>Ecological Specialization</i>	
<u>Dietary (-5 to 5)</u>	1
Largely insectivorous. Few data available for Alaska. Consumes mainly invertebrates such as spiders, beetles, ants, wasps, and caterpillars; fruits and seeds are also consumed, but only in small amounts (Gabrielson and Lincoln 1959; Swanson et al. 2008).	
<u>Habitat (-5 to 5)</u>	1
Found in a variety of coniferous and mixedwood forests, including wetlands and edge habitats (Isleib and Kessel 1973; Spindler and Kessel 1980; Cotter and Andres 2000a; Johnson et al. 2008b; Heinl and Piston 2009). Occasionally found in shrublands (Johnson et al. 2008b; Heinl and Piston 2009). Appears to prefer open and mature spruce forests (Cotter and Andres 2000a; Lance and Howell 2000; Matsuoka and Handel 2007; Handel and Sauer 2017).	
<b>Biological Total:</b>	-32
<b>Action</b> - 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).	<b>Score</b>
<i>Management Plans and Regulations (-10 to 10)</i>	2
Protected under the Migratory Bird Treaty Act (MBTA 1918).	
<i>Knowledge of Distribution and Habitat (-10 to 10)</i>	2
Detected during multi-species surveys e.g. on the Kenai Peninsula (Lance and Howell 2000; Van Hemert et al. 2006), in northern (Tibbitts et al. 2006), western (Petersen et al. 1991; Saracco et al. 2007; Amundson et al. 2018), and central Alaska (Spindler and Kessel 1980; Cotter and Andres 2000a; Handel and Sauer 2017). Habitat associations have been documented (see Habitat section). However, additional surveys and specimens are needed to determine range delineation. Ranges likely overlap in southcentral near Cook Inlet.	
<i>Knowledge of Population Trends (-10 to 10)</i>	2
Monitored only in parts of its range by BBS and off-road surveys (Handel and Sauer 2017). Data from these two survey types suggest different population trends (Handel and Sauer 2017).	
<i>Knowledge of Factors Limiting Populations (-10 to 10)</i>	10
Little is known about the ecology of this species and the factors that limit its population dynamics in Alaska or elsewhere. Willson and Gende (2000) reported high rates of nesting success in southeast Alaska, and significant differences between egg and fledgling survival rates, but their study did not allow them to identify factors that may influence reproductive success. Lower densities in forest stands infested by spruce bark beetles were observed on the Kenai Peninsula (Lance and Howell 2000) and the Copper River Delta (Matsuoka et al. 2001). Other disturbances leading to the loss of mature, coniferous forests, including wildfires, logging, and urbanization, may similarly affect densities of ruby-crowned kinglets on breeding and wintering grounds (Kissling and Garton 2008; Swanson et al. 2008; Kalinowski and Johnson 2010; MacGregor-Fors et al. 2010). Additional research is needed on the effects of weather and climate change, which may affect migration phenology (Mizel et al. 2017) and increase suitable breeding habitat at the northern edge of its range (Marcot et al. 2015). The kinglet's distribution in Denali National Park has remained relatively stable from 1995 to 2013, despite shrub habitats expanding into higher latitudes (Mizel et al. 2016). On wintering grounds, severe winter weather have been linked to lower abundances at local and continental scales (Lepthien and Bock 1976; Laurenzi et al. 1982).	

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

---

<b>Harvest:</b>	None or Prohibited
<b>Seasonal Occurrence:</b>	Breeding
<b>Taxonomic Significance:</b>	Monotypic species
<b>% Global Range in Alaska:</b>	>10%
<b>% Global Population in Alaska:</b>	<25%
<b>Peripheral:</b>	No

## References

---

- Amundson, C. L., C. M. Handel, D. R. Ruthrauff, T. L. Tibbitts, and R. E. Gill. 2018. Montane-breeding bird distribution and abundance across national parks of southwestern Alaska. *Journal of Fish and Wildlife Management* 9(1):180–207. DOI: 10.3996/062017-
- Cotter, P. A., and B. A. Andres. 2000a. Breeding bird habitat associations on the Alaska breeding bird survey. Information and Technology Report USGS/BRD/ITR- 2000-0010, Biological Resource Division, U.S. Geological Survey, Springfield, VA, USA.
- Gabrielson, I. N., and F. C. Lincoln. 1959. *The Birds of Alaska*. The Stackpole Company, Harrisburg, PA, USA.
- Gibson, D. D., and J. J. Withrow. 2015. Inventory of the species and subspecies of Alaska birds, second edition. *Western Birds* 46(2):94–185.
- Handel, C. M. and Sauer, J. R. 2017. Combined analysis of roadside and off-road breeding bird survey data to assess population change in Alaska. *The Condor* 119(3):557-575. DOI: 10.1650/CONDOR-17-67.1
- Handel, C. M., S. A. Swanson, D. A. Nigro, and S. M. Matsuoka. 2009. Estimation of avian population sizes and species richness across a boreal landscape in Alaska. *The Wilson Journal of Ornithology* 121(3):528–547.
- Heinl, S. C., and A. W. Piston. 2009. Birds of the Ketchikan area, southeast Alaska. *Western Birds* 40(2):54–144.
- Isleib, M. E., and B. Kessel. 1973. Birds of the north Gulf Coast- Prince William Sound region, Alaska. Biological Papers of the University of Alaska no. 14. University of Alaska Fairbanks, AK, USA.
- Johnson, J. A., B. A. Andres, and J. A. Bissonette. 2008b. Birds of the major mainland rivers of Southeast Alaska. General Technical Report PNW-GTR-739. U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR, USA.
- Kalinowski, R. S., and M. D. Johnson. 2010. Influence of suburban habitat on a wintering bird community in coastal northern California. *The Condor* 112(2):274–282. DOI: 10.1525/cond.2010.090037
- Kessel, B., and D. D. Gibson. 1978. Status and distribution of Alaska birds. *Studies in Avian Biology* No. 1. Allen Press, Lawrence, KS, USA.
- Kissling, M. L., and E. O. Garton. 2008. Forested buffer strips and breeding bird communities in southeast Alaska. *Journal of Wildlife Management* 72(3):674-681.
- Lance, E. W., and S. Howell. 2000. Survey of songbirds during a spruce beetle (*Dendroctonus rufipennis*) outbreak on the Kenai Peninsula, Alaska. *Northwestern Naturalist* 81(1):1-10. DOI: 10.2307/3536893.
- Laurenzi, A. W., B. W. Anderson, and R. D. Ohmart. 1982. Wintering biology of ruby-crowned kinglets in the Lower Colorado River Valley. *The Condor* 84(4):385-398. DOI: 10.2307/1367441

- Lepthien, L. W., and C. E. Bock. 1976. Winter abundance patterns of North American kinglets. *The Wilson Bulletin* 88(3):483–485. Available online: <https://sora.unm.edu/node/3379>
- MacGregor-Fors, I., L. Morales-Pérez, and J. E. Schondube. 2010. Migrating to the city: responses of neotropical migrant bird communities to urbanization. *The Condor* 112(4):711–717. DOI: 10.1525/cond.2010.100062
- Marcot, B. G., M. T. Jorgenson, J. P. Lawler, C. M. Handel, and A. R. DeGange. 2015. Projected changes in wildlife habitats in Arctic natural areas of northwest Alaska. *Climate Change* 130(2):145–154. DOI: 10.1007/s10584-015-1354-x
- Matsuoka, S. M., and C. M. Handel. 2007. Nesting ecology of boreal forest birds following a massive outbreak of spruce beetles. *Journal of Wildlife Management* 71(1):51–63. DOI: 10.2193/2005-460
- Matsuoka, S. M., C. M. Handel, and D. R. Ruthrauff. 2001. Densities of breeding birds and changes in vegetation in an Alaskan boreal forest following a massive disturbance by spruce beetles. *Canadian Journal of Zoology* 79(9):1678–1690. DOI: 10.1139/cjz-79
- Migratory Bird Treaty Act (MBTA). 1918. U.S. Code Title 16 §§ 703-712 Migratory Bird Treaty Act.
- Mizel, J. D., J. H. Schmidt, C. L. McIntyre, and C. A. Roland. 2016. Rapidly shifting elevational distributions of passerine species parallel vegetation change in the subarctic. *Ecosphere* 7(3):e01264. DOI: 10.1002/ecs2.1264
- Mizel, J. D., J. H. Schmidt, C. L. McIntyre, and M. S. Lindberg. 2017. Subarctic-breeding passerines exhibit phenological resilience to extreme spring conditions. *Ecosphere* 8(2):e01680. DOI: 10.1002/ecs2.1680
- NatureServe. 2007b. NatureServe Explorer: An online encyclopedia of life. Version 6.2. NatureServe, Arlington, VA, USA. Available online: <http://www.natureserve.org/explorer>
- Petersen, M. R., D. N. Weir, and M. H. Dick. 1991. Birds of the Kilbuck and Ahklun Mountain region, Alaska. *North American Fauna* 76:1-158.
- Partners in Flight (PIF). 2019. Population Estimates Database, version 3.0. Available online: <http://pif.birdconservancy.org/PopEstimates>. Accessed 09-April-2019.
- Saracco, J. F., D. R. Kaschube, and D. F. DeSante. 2007. 2006 report of the Monitoring Avian Productivity and Survivorship (MAPS) Program in Dillingham, Nome, and Umiat, Alaska. The Institute for Bird Populations, Point Reyes, CA, USA.
- Spindler, M. A., and B. Kessel. 1980. Avian populations and habitat use in interior Alaska taiga. Final report, University of Alaska Museum, Fairbanks, AK, USA.
- Swanson, D. L., J. L. Ingold, and G. E. Wallace. 2008. Ruby-crowned Kinglet (*Regulus calendula*), version 2.0. In Poole, A. F., ed. *The Birds of North America*, Cornell Lab of Ornithology, Ithaca, NY, USA. DOI: 10.2173/bna.119
- Tibbitts, T. L., D. R. Ruthrauff, R. E. Gill, Jr., and C. M. Handel. 2006. Inventory of montane-nesting birds in the Arctic Network of National Parks, Alaska. Report NPS/AKARC/NRTR-2006/02/, Arctic Network Inventory and Monitoring Program, National Park
- Van Hemert, C., C. M. Handel, M. N. Cady, and J. Terenzi. 2006. Summer inventory of landbirds in Kenai Fjords National Park. Final report NPS/AKRSWAN/NRTR-2006/04, U.S. Geological Survey, Alaska Science Center, Anchorage, AK, USA.
- Willson, M. F., and S. M. Gende. 2000. Nesting success of forest birds in southeast Alaska and adjacent Canada. *The Condor* 102:314–325.

---

Review status: Peer-reviewed

Version date: 09 May 2019

Alaska Center for Conservation Science  
Alaska Natural Heritage Program  
University of Alaska Anchorage  
Anchorage, AK