

Billing Code 4310-55-P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[DOCKET NO. FWS-R7-ES-2010-0061]

[MO 92210-0-0008]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to List the Red Knot subspecies *Calidris canutus roselaari* as Endangered

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 90-day petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the *roselaari* subspecies of red knot (*Calidris canutus roselaari*) as endangered under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition does not present substantial information

indicating that listing this subspecies may be warranted. Therefore, we are not initiating a status review in response to this petition. However, we ask the public to submit to us any new information that becomes available concerning the status of, or threats to, *C. c. roselaari* or its habitat at any time.

DATES: The finding announced in this document was made on **[January 4, 2011]**.

ADDRESSES: This finding is available on the Internet at <http://www.regulations.gov> at Docket Number **FWS-R7-ES-2010-0061**. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Fairbanks Fish and Wildlife Field Office, 101 12th Avenue, Room 110, Fairbanks, AK 99701. Please submit any new information, materials, comments, or questions concerning this finding to the above street address.

FOR FURTHER INFORMATION CONTACT: Ted Swem, Branch Chief, Endangered Species Program of the Fairbanks Fish and Wildlife Field Office (see **ADDRESSES**); by telephone (907-456-0441); or by facsimile to (907-456-0208). If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Background

Section 4(b)(3)(A) of the Act (16 U.S.C. 1531 *et seq.*) requires that we make a finding on whether a petition to list, delist, or reclassify a species presents “substantial scientific or commercial information” indicating that the petitioned action may be warranted. We base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we make this finding within 90 days of our receipt of the petition, and publish our notice of the finding promptly in the **Federal Register**.

Our standard for “substantial scientific or commercial information” is the “amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted” (50 CFR 424.14(b)). If we find that “substantial scientific or commercial information” was presented, we are required to promptly conduct a species status review, which we summarize in a subsequent finding due within 12 months.

Petition History and Previous Federal Action

On February 27, 2008, we received a petition, dated February 27, 2008, from Defenders of Wildlife, American Littoral Society, American Bird Conservancy, Delaware

Audubon, Delaware Nature Society, Delaware Riverkeeper Network, National Audubon Society, New Jersey Audubon Society, and Citizens Campaign for the Environment, requesting that the Department of the Interior (Department) use its emergency authorities under section 4(b)(7) of the Act to list the red knot *C. c. rufa* subspecies as an endangered species. The petitioners also seek to have the Department list as endangered “a broader taxon comprising both the *rufa* subspecies and the *roselaari* subspecies.” The petition further calls for a “national listing based on similarity of appearance” under section 4(e) of the Act. The petition contains the requisite identification information for the petitioners, as required at 50 CFR 424.14(a).

We previously made a “warranted but precluded” determination (in response to one petition received on August 9, 2004, and two others received on August 5, 2005), on September 12, 2006, for the *C. c. rufa* subspecies and added this subspecies to our list of candidate species with a listing priority number of 6 (71 FR 53758–53759). “Warranted but precluded” means we have sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened, but that preparation and publication of a listing proposal is precluded by higher priority listing actions. In a May 1, 2008, letter responding to the current petition, we stated that while we had previously made a determination that listing *C. c. rufa* was “warranted but precluded” and added the subspecies to our candidate list, we were re-evaluating — as part of our annual candidate review process — whether listing remained “warranted but precluded” and whether to utilize the emergency listing provisions of the Act. We also stated in our May 1, 2008, letter that, due to court orders and judicially approved settlement agreements for other

listing and critical habitat determinations under the Act that required nearly all of our listing and critical habitat funding for fiscal year 2008, we would not be able to further address the petition's request to list *C. c. roselaari* at that time but would complete the action when workload and funding allowed. Subsequently, in the 2008 Candidate Notice of Review for *C. c. rufa*, the Service took into consideration the information supplied by the petitioners and changed the listing priority number from 6 to 3 for this subspecies because threats were determined to be imminent (73 FR 75178-75179, December 10, 2008). Because we determined that it was not necessary, the Service did not emergency list *C. c. rufa*, as set forth in the October 29, 2009, Species Assessment and Listing Priority Assignment Form for *Calidris canutus rufa* (Service 2009). In the 2009 Candidate Notice of Review for *C. c. rufa*, the Service retained a listing priority number of 3 for this subspecies (74 FR 57825-57826, November 9, 2009).

Accordingly, as we addressed the petitioners' request for an emergency listing of the *rufa* subspecies in the October 29, 2009, Species Assessment and Listing Priority Assignment Form, this finding addresses only whether the petition presents substantial scientific or commercial information that the following petitioned actions may be warranted: (1) Listing the *C. c. roselaari* as endangered or threatened, (2) listing "a broader taxon comprising both the *rufa* subspecies and the *roselaari* subspecies" as endangered or threatened, and (3) a "national listing based on similarity of appearance" under section 4(e) of the Act. We base our determinations on information set forth in the petition, information in the Service's files, and other readily available information.

Species Information

The red knot (*Calidris canutus*) is a medium-sized (23 to 28 centimeters, or 9 to 11 inches, in length), Arctic-breeding shorebird within the genus *Calidris*. The breeding plumage of the red knot is distinctive; the face, breast, and upper belly are a rich rufous-red, and the lower belly and under tail-coverts are light-colored with dark flecks. Upperparts are dark brown with white and rufous feather edges; outer primary feathers are dark brown to black (Davis 1983, p. 372; Harrington 2001, p. 2). Females are similar to males in appearance, but rufous colors are typically less intense in females, with more buff or light gray coloration on dorsal parts (Niles *et al.* 2007, p. 14). Subtle subspecies differences in breeding plumage have been described. Non-breeding plumage, dusky gray above and whitish below, is similar between sexes and among subspecies (Harrington 2001, p. 2). Juveniles resemble non-breeding adults, except that the feathers of the scapulars and wing coverts of juveniles are edged with white and have narrow, dark subterminal bands, giving the upperparts a scalloped appearance (Davis 1983, p. 372); whereas the feathers of adults are more uniform. The black bill is long, straight, and slightly tapered, and the legs and feet are dark green or black (Davis 1983, p. 373). Adult body mass varies seasonally, with highest mean mass occurring during spring (205 grams (g); 7.2 ounces (oz)) and fall (172 g; 6 oz) migration, and lowest values occurring during early winter (125 g; 4.4 oz) (Harrington 2001, p. 12).

Six subspecies of red knots (*C. c. canutus*, *C. c. piersma*, *C. c. rogersi*, *C. c. rufa*, *C. c. roselaari*, and *C. c. islandica*) are currently recognized worldwide based on small

differences in body dimensions and breeding plumage characteristics, and discrete breeding areas and migration routes (Piersma and Baker 2000, p. 109; Niles *et al.* 2007, p. 3). In all subspecies, sexual dimorphism occurs in plumage coloration (Tomkovich 1992, p. 18), as well as both bill length and body weight, with females having longer bills and higher body weights on average than males (Niles *et al.* 2007, p. 7).

Four genetically distinct groups of red knots were recently identified through genetic analysis; they are comprised of *C. c. canutus*, *C. c. piersma*, *C. c. rogersi*, and a North American group containing *C. c. rufa*, *C. c. roselaari* and *C. c. islandica* (Buehler and Baker 2005, p. 502). *C. c. islandica* breeds in the Canadian high Arctic and Greenland, and winters in western Europe. The other two subspecies in the North American group occur within the United States: *C. c. rufa*, currently a candidate species for listing, and *C. c. roselaari*, the focus of this 90-day finding.

C. c. roselaari and *C. c. rufa* are paler by comparison (with *C. c. rufa* considered the palest) to the other subspecies and have a much longer average bill-length (Harrington 2001, p. 4; Niles *et al.* 2007, p. 7). *C. c. roselaari* is longer-winged than the other subspecies, but bill-length overlaps extensively (Harrington 2001, p. 5). In breeding plumage, *C. c. roselaari*'s dorsal coloration is described as similar to that of *C. c. canutus*, but darker with slightly more variegated pattern. Ventral coloration is considered more similar to that of *C. c. rufa* than to that of *C. c. rogersi*, especially with respect to amount of white plumage on vent and lower belly (Harrington 2001, p. 5). However, as recently as 2007, red knot researchers acknowledged that "no one has

adequately compared morphological variation in *C. c. rufa* and *C. c. roselaari* populations” (Niles *et al.* 2007, p. 7). In 2006, individual *C. c. roselaari* caught and measured at a wintering site in Guerrero Negro, Baja, Mexico, had longer bill-lengths than males belonging to wintering populations known or thought to be *C. c. rufa*, suggesting *C. c. roselaari* are larger than *C. c. rufa* (Niles *et al.* 2008, p. 3).

Based on genetics, the red knot is thought to have recently survived a genetic bottleneck (resulting in reduced genetic variability), with subspecies groups estimated to have diverged very recently. The three subspecies comprising the North American group, including *C. c. roselaari*, are estimated to have diverged within the last 5,500 years (Buehler and Baker 2005, p. 505). We accept the characterization of *C.c roselaari* as a subspecies because each currently recognized subspecies is believed to occupy separate breeding areas, in addition to having morphological and behavioral character differences. The Service and partners are currently investigating red knot genetics to better assess population structure of *C.c roselaari* and *rufa* subspecies; results are expected within the next few years.

More is known about the range and biology of *C. c. rufa*, than about *C. c. roselaari*. *C. c. roselaari* breeds in Alaska and on Wrangel Island, Russia (Tomkovich 1992, p. 22); whereas *C. c. rufa* breeds in the central Canadian Arctic (Harrington 2001, p. 4). *C. c. roselaari* is the only red knot subspecies known to nest in the United States. Its breeding range in northwest and northern Alaska is not well known, but includes the Seward Peninsula and inland areas north of Kotzebue, including the DeLong Mountains

of the Brooks Range (Childs 1969, p. 33; Kessel 1989, pp. 161-162; Kessel and Gibson 1978, p. 39; Harrington 2001, p. 3).

C. c. rufa migrates primarily along the Atlantic coast of North America, with most wintering sites along the coasts of South America and fewer wintering sites along the Atlantic and Gulf coasts of the southeastern United States (Harrington 2001, p. 4; Morrison *et al.* 2006, pp. 76-77). Although red knots are known to use the Texas and Florida coasts, other extensive marsh areas of Gulf coast States have not been surveyed. There are sporadic reports of red knots in these areas, but the level of use is not known (A. Scherer, U.S. Fish and Wildlife Service, pers. comm. 2010). There has been taxonomic uncertainty regarding *C. canutus* wintering in the southeastern United States because *C. canutus* that winter in Florida, Georgia, and South Carolina have a different molt schedule and do not migrate to southern South America. These birds have been referred to in the past as either *C. c. roselaari* or *C. c. rufa* (Niles *et al.* 2007, pp. 9–10). However, in the attachment to the petition, Niles *et al.* (2008, p. 1) identify recent information that indicates *C. c. roselaari* is largely or wholly confined to the Pacific coast of the Americas during migration and in winter, and Niles *et al.* (2008, p. 1) conclude that red knot populations found along the western Atlantic Ocean coast (wintering in Florida, Brazil, and Tierra del Fuego) are *C. c. rufa*. The conclusion is based on banding records confirming that red knots found on the Pacific coast of North America breed in Alaska and Wrangel Island, Russia, and morphological measurements of wintering red knots captured in Baja, Mexico, indicating these birds were larger than red knots at other

wintering sites where it was previously unclear if the birds were *C. c. roselaari* or *C. c. rufa* (Niles *et al.* 2008, p. 3).

Currently, *C. c. roselaari* primarily use a few stopover sites during their northward migration to breeding areas in northern Alaska and Wrangel Island, Russia. The most important stopover sites are Grays Harbor and Willapa Bay in Washington, and Yukon-Kuskokwim Delta and Copper River Delta in Alaska (Isleib 1979, p. 128; Gill and Handel 1990, p. 712; Page *et al.* 1999, p. 467). Smaller numbers have been documented during migration in the Yakutat Forelands, Alaska, and the San Francisco Bay, California, and during both migration and wintering along the southern coast of California (Andres and Browne 1998, p. 328; Page *et al.* 1999, p. 468; Stenzel *et al.* 2002, p. 75). The subspecies primarily bypasses Oregon and British Columbia (McGie 2003, p. 232; Buchanan 2007, p. 65). Use of stopover sites during fall migration is unclear, as the migration is protracted and large concentrations are not reported in fall at sites used during spring (Harrington 2001, p. 7). Red knots are known to undertake long flights during migration that may span thousands of miles (Harrington 2001, p. 1); thus during fall migration they may bypass sites used in spring. Important wintering aggregations of *C. c. roselaari* have been documented in Western Mexico at Guerrero Negro, Baja California Sur (Carmona *et al.* 2008, p. 10), and along the Pacific Northwest coast of Mexico in the Gulf of California at Ensenada Pabellones and Bahia Santa Maria, Sinaloa (Engilis *et al.* 1998, p. 338). *C. c. roselaari* probably also winters farther south than Mexico (Niles *et al.* 2007, p. 20), but important sites have not been identified. We lack information on the historical range of *C. c. roselaari*.

Different habitats are used by red knots for breeding and migration/wintering. During migration stopovers and in wintering areas, red knots are primarily found in coastal habitats, particularly in areas with extensive sandy intertidal flats or near tidal inlets or mouths of bays and estuaries (Harrington 2001, pp. 8-9). Prey items for *C. c. roselaari* include bivalves and other benthic invertebrates (Harrington 2001, p. 9).

On the breeding grounds in Alaska, *C. c. roselaari* are widely dispersed inland near the Arctic coast (Harrington 2001, pp. 5, 8). Nesting has been documented in upland habitat, particularly on limestone mounds on windswept slopes, 42 to 48 kilometers (20 to 30 miles) inland (Kessel 1989, p. 162; Harrington 2001, p. 8). The red knot's diet on the breeding grounds consists primarily of terrestrial invertebrates, but early in the breeding season they may consume a substantial amount of plant material, such as grass shoots and seeds (Kessel 1989, pp. 162-163; Harrington 2001, p. 11). Red knots lay one clutch (usually 4 eggs) per season. No information is available on hatching success or chick survival rates. Male parents brood and defend their young, which leave the nest within 24 hours of hatching (Harrington 2001, p. 20; Niles *et al.* 2007, pp. 28, 31–32). While the oldest wild red knot recorded worldwide was estimated to be 25 years old, few red knots are assumed to live more than 7 years (Niles *et al.* 2007, p. 33).

The historical and current population sizes of *C. c. roselaari* are uncertain, and the trend is unknown. Supporting documentation submitted with the petition acknowledges that all attempts to assess the population size of *C. c. roselaari* have been confounded by

uncertainty as to which passage (migrating) or wintering population belongs to which subspecies (Niles *et al.* 2008, p. 2). Although *C. c. roselaari* is now considered to be largely or wholly confined to the Pacific coast of the Americas during migration and in winter (Niles *et al.* 2008, p. 1), limited data exist from the sites along the Pacific coast of North America that are known to be used by this subspecies; in addition, the complete extent of wintering locations and the numbers breeding in Alaska are unknown. Population estimates have ranged from 150,000 (Brown *et al.* 2001, p. 53; Morrison *et al.* 2001, p. 34) to 20,000 (Morrison *et al.* 2006, p. 75) with inclusion of red knot populations found along the western Atlantic Ocean coast (now considered to be *C. c. rufa*), to less than 10,000 when including only the Pacific coast of the North America population (Niles *et al.* 2008, p. 6).

The longest-running data set comes from counts on the central Yukon-Kuskokwim Delta at three field sites where *C. c. roselaari* are commonly observed during spring migration. While a peak daily count of 110,000 red knots was observed in 1980 at Tutakoke River (Gill and Handel 1990, p. 712), peak daily count has not exceeded 6,380 (Service, unpublished data) in all other years before and after 1980 (24 of 31 years with peak count data from 1978-2007). There is no evidence of a long-term decline based on the one anomalous count in 1980. Overall, observed peak numbers have varied substantially among years (range 25 – 6,380 without 1980 count); the observed variation is unexplained, and no trend is detectable. The reported counts are conducted on a small portion of coastal Yukon-Kuskokwim Delta. More extensive mudflats occur outside of the study area; thus, while unknown, it is possible *C. c. roselaari* also occupies

these areas to varying degrees during spring migration, which could account for the observed variation in numbers among years. We consider the numbers reported from counts on the Yukon-Kuskokwim Delta to represent minimum numbers passing through the entire delta, with recent observations indicating a minimum, but not absolute number, of less than 10,000 individuals. On the Copper River Delta, Alaska, count-based estimates increased from 10,000 in the 1960s to 40,000-50,000 in the early 1970s, to as high as 100,000 in late 1970s (Isleib 1979, p. 128). None of the data collected at either the Yukon-Kuskokwim or Copper River Deltas included systematic or replicate counts, evaluation of accuracy, or assessment of turnover rates, which would be needed to determine actual abundance from the counts. We also do not know whether or not birds stopping at the Copper River Delta also stop at the Yukon-Kuskokwim Delta or migrate directly to the breeding grounds and therefore represent additional individuals. Supporting documentation submitted with the petition (Niles *et al.* 2008, p. 6) claims that *C. c. roselaari* might have declined from greater than 100,000 (in period 1975-1980) to less than 10,000, if the large numbers reported in Alaska in 1975-1980 were all individuals of this subspecies. However, it has been suggested (Morrison *et al.* 2006, p. 76) and noted in the supporting documentation to the petition (Niles *et al.* 2008, p. 5), that some of the birds seen during the high-count years might have been due to an unusual arrival of *C. c. rogersi*, which breed in eastern Siberia and resemble *C. c. roselaari* in appearance (Morrison *et al.* 2006, p. 34). Alternatively, inter-annual variation in movements and migration routes through Alaska may have caused large variation in the proportion of *C. c. roselaari* that are subject to counting among years.

Thus, these exceptionally large counts are difficult to interpret, and cannot with reliability be ascribed to *C. c. roselaari*, or used to infer trends in abundance of *C. c. roselaari*.

Data from sites outside Alaska are fragmentary and difficult to interpret, particularly given that counts at some sites have fluctuated among years, presumably due to changing environmental conditions. The petition (p. 4) states that the current *C. c. roselaari* population totals fewer than 10,000 individuals with uncertainty regarding the extent of the subspecies' decline. While it is possible that the population size is less than 10,000, observations have not been collected in a long enough time-series at any of these sites to determine population trend at particular sites or to accurately estimate overall population size. The Service is currently collaborating with shorebird researchers to estimate the abundance of the stopover population of *C. c. roselaari* in important Pacific Flyway stopover areas in Washington (Grays Harbor and Willapa Bay) as a means of determining if a reliable estimate of the population size of this subspecies can be developed (Brad Andres, Service, pers. comm. 2010).

C. c. roselaari is currently listed as a Bird of Conservation Concern by the U.S. Fish and Wildlife Service, Division of Migratory Bird Management (USFWS 2008, p. 66), which deems it a priority species for conservation actions. This list is based on an assessment score from three bird conservation plans: Partners in Flight North American Landbird Conservation Plan, United States Shorebird Conservation Plan, and North American Waterbird Conservation Plan (USFWS 2008, p. 2). While this list provides no

regulatory protection, its purpose is to provide a conservation benefit by drawing attention to the subspecies' needs.

Evaluation of Information for this Finding

Request to List *C. c. roselaari*

In making this 90-day finding, we first evaluated whether information regarding the threats to *C. c. roselaari*, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action of listing the *roselaari* subspecies may be warranted. Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats to a species, we must look beyond the exposure of the species to the factor to evaluate whether the species may

respond to the factor in a way that causes actual or likely impacts to the species. If there is exposure to a factor and the species responds negatively, the factor may be a threat and we attempt to determine how significant a threat it is. The threat may be significant if it drives, or contributes to, the risk of extinction of the species such that the situation may warrant listing the species as endangered or threatened as those terms are defined in the Act. The identification of factors that could impact a species negatively may not be sufficient to compel a finding that substantial information has been presented suggesting that listing may be warranted. The information should contain evidence or the reasonable extrapolation that these factors may be operative threats that act on the species to the point that the species may meet the definition of threatened or endangered under the Act. We found no information to suggest that threats may be acting on, or are likely to act on, *C. c. roselaari* such that the subspecies may become in danger of extinction now or in the foreseeable future.

In making this 90-day finding, we evaluated whether there is substantial information regarding the threats to *C. c. roselaari* presented in the petition and other information available in our files indicating that the petitioned action of listing *C. c. roselaari* may be warranted. Our evaluation of this information is presented below.

A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range.

Supporting documentation submitted with the petition asserts that, as a small population, *C. c. roselaari* is particularly vulnerable to habitat loss (Niles *et al.* 2008, p. 11), but that documentation does not support this statement with any evidence that this factor is impacting or is likely to impact this subspecies.

The primary factor threatening *C. c. rufa* is destruction and modification of its habitat, particularly the modification of habitat in Delaware Bay through harvesting of horseshoe crabs (74 FR 57825, November 9, 2009). During spring migration, one of the key stopover sites for *C. c. rufa* is Delaware Bay, where they forage on horseshoe crab (*Limulus polyphemus*) eggs to replenish resources needed to complete their migration (Harrington 2001, p. 11). As the *C. c. roselaari* is now considered to be confined to the Pacific coast, this subspecies is presumably not subjected to threats associated with habitat loss in Delaware Bay or at other sites used by *C. c. rufa* along the Atlantic coast.

Because the extent of *C. c. roselaari*'s historical and current range is unknown, it is challenging to assess the extent of historical habitat loss that has occurred and its impact on this subspecies. We believe, however, that little habitat loss has occurred on the breeding grounds or key migration sites used by *C. c. roselaari* in Alaska, due to the areas' remoteness. But wetland loss has occurred throughout the United States due to development (Dahl 2006, p. 15). We, therefore, assume some direct loss of habitat due to development has occurred at migration stopover sites for *C. c. roselaari* along the Pacific coast of the United States. We have no evidence in our files, however, on the extent of

this loss or information suggesting that this habitat loss has resulted in a decline of this subspecies.

Wetland habitat loss has also occurred along the Pacific coast of the United States due to the spread of invasive plant species, including wetland habitat loss at key migration stopover sites used by *C. c. roselaari*. In particular, nonnative cordgrass (*Spartina*) species are aggressive weeds that disrupt ecosystems of native saltwater estuaries by outcompeting native vegetation and converting mudflats into monotypic *Spartina* meadows that accumulate sediment (Phillips *et al.* 2008, p. 5). This results in decreased plant diversity, elevated intertidal areas, and displacement of invertebrates, all of which reduce useable foraging and roosting habitat for shorebirds (Phillips *et al.* 2008, p. 5).

During the 1990s, the spread of *Spartina* completely covered some key spring stopover sites for *C. c. roselaari* in Willapa Bay and portions of Grays Harbor, Washington (Buchanan 2003, pp. 47–48; Chappell 2005, p. 153; Buchanan 2006, p. 65). Eradication efforts have been underway in Washington, as well as in other locations along the Pacific coast, including San Francisco Bay, California. Since 2004, the Service has cooperated with Washington and other groups in a Statewide effort to eradicate *Spartina* from the State's marine waters. This effort has been extremely successful, with an 85 percent reduction in the number of solid acres of *Spartina* Statewide by 2007 (Phillips *et al.* 2008, p. 1).

Spartina was considered to have been largely removed from important red knot habitat in Willapa Bay by 2006 (Buchanan 2006, p. 65). Control of *Spartina* meadows has resulted in increased use by shorebirds. Over time, this increased use occurs as the meadows return to pre-invasion natural mudflats with invertebrate prey for shorebirds (Phillips *et al.* 2008, pp. 9–10). *Spartina* eradication efforts continue, followed by maintenance efforts within 3 to 5 years. Various eradication and control efforts have been underway for other invasive wetland plant species, such as the common reed (*Phragmites australis*). Other wetland restoration efforts include Service awards of 2010 National Coastal Wetland Conservation grants to Washington to acquire, restore, or enhance coastal wetlands, including acquisition and protection of wetland habitat in Grays Harbor and Willapa Bay. Thus, we determine that efforts to manage habitat loss in coastal migratory routes along the West Coast have likely ameliorated potential impacts, and the petition has not presented substantial information indicating that habitat loss may have affected the abundance or status of *C. c. roselaari*.

Future sea-level rise and shoreline erosion may reduce the availability of intertidal habitat used by *C. c. roselaari* during migration or wintering. If habitat is limited, this could affect the subspecies' ability to build up adequate nutrient and energy stores to complete their long migrations (Meltofte *et al.* 2007, p. 36). The actual rates of sea-level rise are hard to predict with any reliability. However, sea-level rise is predicted to increase, and sea levels will likely rise globally by at least 0.18-0.59 meters (0.6 – 1.9 feet) by the end of this century (IPCC 2007, p. 8). Site-specific rates will differ from the global mean; thus, the persistence of coastal and wetland environments for *C. c. roselaari*

will depend on the degree to which sedimentation keeps pace with sea level rise, as well as local geomorphologic and other anthropogenic factors that affect wetlands at key migration and wintering sites.

Galbraith *et al.* (2002, pp. 177-178) examined several different scenarios of future sea-level rise and projected the amount of intertidal habitat loss at key shorebird sites in the United States, including Willapa Bay and San Francisco Bay. Willapa Bay is predicted to lose a relatively small amount (8 percent) of its shorebird intertidal feeding habitats by 2050 but a larger amount (18 percent) by 2100. San Francisco Bay is predicted to lose 12 percent of its intertidal feeding habitats in the northern bay and 24 percent in the southern bay by 2050, and 39 percent in the northern bay and 70 percent in the southern bay by 2100 under the 50-percent probability scenario (Galbraith *et al.* 2002, pp. 177-178). Such modeling efforts indicate that loss of intertidal habitat is expected to occur as sea levels rise at some sites currently used by *C. c. roselaari*. In other areas along *C. c. roselaari*'s migration route that currently are, or could be, used by the subspecies, however, there may be a net gain of intertidal flats as coastline migrates inland. The Service is currently participating in multiple efforts to model impacts of future sea-level rise along the Pacific coast. When completed, these models may allow us to predict changes in habitat for *C. c. roselaari*, but at present we lack sufficient information to evaluate all sites used by the subspecies during migration and wintering to determine the scope and scale of potential habitat loss due to sea-level rise. We determine that at this time there is inadequate information to support the petitioners' contention that sea-level rise may pose a population-level threat to *C. c. roselaari*.

While there appears to be ongoing and threatened habitat destruction and modification in areas used by migrating red knots along the Pacific coast in the United States and possibly in wintering habitats in Mexico and other unknown locations, the information presented or readily available does not suggest a population-level impact to *C. c. roselaari* from habitat loss in these areas. In summary, we find that the information provided in the petition, as well as other information in our files, does not present “substantial scientific or commercial information” indicating that the petitioned action of listing the *roselaari* subspecies may be warranted due to the present or threatened destruction, modification, or curtailment of its habitat or range.

B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes.

The petition does not claim that overutilization of *C. c. roselaari* for commercial, recreational, scientific, or educational purposes is taking place or will take place, and does not provide any evidence that this factor may be impacting or will likely impact the subspecies. In the second half of the 19th and first quarter of 20th centuries, red knots were heavily hunted for both market and sport (Harrington 2001, p. 22). Hunting of red knots is no longer allowed in the United States. Based on band recoveries, red knots are hunted in some regions of South America. Take has been documented in Guianas and Barbados (Harrington 2001, p. 22), areas likely occupied by *C. c. rufa*. The level of hunting and impact to *C. c. roselaari* is unknown. The available information does not

suggest that hunting poses, or is likely to pose, a significant threat to the subspecies. In summary, we find that the information provided in the petition, as well as other information in our files, does not present substantial scientific or commercial information indicating that the petitioned action of listing the *roselaari* subspecies may be warranted due to overutilization for commercial, recreational, scientific, or education purposes.

C. Disease or Predation.

The petition does not claim or provide any evidence that disease or predation of *C. c. roselaari* is a factor impacting or that will impact the subspecies. Although there is some information in our files that disease has been a cause of mortality for individuals of *C. c. rufa*, the Service has determined that disease and predation do not appear to pose threats to the persistence of *C. c. rufa* (USFWS 2009, pp. 23-24). We do not have any specific information regarding disease for *C. c. roselaari*. We have no information that predation rates have risen in recent years or been significantly affected by anthropogenic factors. On the breeding grounds, microtine rodent (lemming and vole) cycles affect shorebird nest predator cycles, resulting in year-to-year fluctuations in productivity (Niles *et al.* 2007, p. 161). The available evidence does not indicate that predation during the breeding season is having, or is likely to have, a long-term or significant impact on red knots (USFWS 2009, p. 23). In summary, we find that the information provided in the petition, as well as other information in our files, does not present “substantial scientific or commercial information” indicating that the petitioned action of listing the *roselaari* subspecies may be warranted due to disease or predation.

D. The Inadequacy of Existing Regulatory Mechanisms.

The petition does not claim that inadequacy of existing regulatory mechanisms for *C. c. roselaari* is taking place or is likely to take place, and does not provide any evidence that the lack of existing regulatory mechanisms is impacting or is likely to impact the subspecies.

The petition does claim that existing regulatory mechanisms are inadequate to conserve foraging habitat on Delaware Bay for red knots foraging on horseshoe crabs at this key spring migration stopover site (Petition, p. 3). The Service has identified the inadequacy of existing regulatory mechanisms related to habitat destruction and modification, particularly in Delaware Bay, as a significant threat to *C. c. rufa* (USFWS 2009, p. 34). However, as *C. c. roselaari* is believed to be largely or wholly confined to the Pacific coast of the Americas during migration and in winter (Niles *et al.* 2008, p. 1), there is no evidence that this subspecies passes through Delaware Bay. Therefore, *C. c. roselaari* is presumably not affected by changes to habitat caused by inadequate regulatory mechanisms at Delaware Bay.

The Migratory Bird Treaty Act (16 U.S.C. 703-712) (MBTA) is the only current Federal protection provided for *C. c. roselaari*. The MBTA prohibits “take” of individuals but, other than for nesting sites, provides no authority for protection of habitat or food resources. Niles *et al.* (1997, p. 165) report human disturbance as a major threat

to *C. c. rufa* throughout its migratory range in the United States. The MBTA does not afford red knots protection from human disturbance on migratory and wintering areas. We believe that human disturbance to *C. c. roselaari* on their breeding grounds is minimal, due to the remoteness of these areas in Alaska and on Wrangel Island, Russia. We also believe limited human disturbance occurs at migration sites in Alaska, again due to the remote nature of these sites. Human disturbance, such as recreational use of beaches, including foraging and roosting sites, likely occurs on migratory areas along the Pacific coast of the United States and in wintering areas in Mexico and in other unknown locations, but we lack information in our files on the extent of disturbance and, if it is occurring, on the level of impact to the subspecies.

In April 2007, the Committee on the Status of Endangered Wildlife in Canada determined that the *C. c. roselaari* type was threatened (COSEWIC 2007, p. 42). As a result, it is now protected under Canada's Federal Species at Risk Act (SARA). The designated unit (referred to as "*C. c. roselaari* type") is defined to include "the subspecies *roselaari* and two other populations that winter in Florida and northern Brazil and that seem to share characteristics of *roselaari*" (COSEWIC 2007, p. 43). These two populations wintering in Florida and northern Brazil are now considered to be *C. c. rufa* (Niles *et al.* 2008, p. 1), and the declines and threats identified for listing these two populations are confined to *C. c. rufa*. The SARA covers migratory birds in Canada on private, provincial, territorial, and Federal lands. Under SARA, projects that require an environmental assessment must consider the project's effects on listed wildlife species,

including recommendations for measures to avoid or reduce adverse effects and plans to monitor the impacts of the project. Destruction of critical habitat of endangered and threatened species found on Federal lands is prohibited. The SARA has permit issuance criteria that include minimizing impacts of the proposed activity and avoiding jeopardy to the species.

In summary, we find that the information provided in the petition, as well as other information in our files, does not present “substantial scientific or commercial information” indicating that the petitioned action of listing the *C. c. roselaari* subspecies may be warranted due to inadequacy of existing regulatory mechanisms.

E. Other Natural or Manmade Factors Affecting the Its Continued Existence.

The petition and its supporting documentation claim that new evidence suggests that *C. c. roselaari* is vulnerable to sudden and imminent extinction due to the inability of a suggested small population size to withstand catastrophic, population-altering events and harmful genetic mutation (Niles *et al.* 2008, p. 11; Petition, pp. 4–5). However, the petition materials do not support this statement with any evidence that this factor is currently impacting or is likely to impact this subspecies in the foreseeable future. Small populations are generally at greater risk of extinction from stochastic processes than are large populations. However, a given population size will not carry with it the same risk for all species, and the fact that a species has low numbers does not necessarily indicate that it may be in danger of extinction in the foreseeable future. Although there is

uncertainty about the population size of *C. c. roselaari*, a population with possibly fewer than 10,000 individuals, we do not have information in our files on vulnerability of the subspecies to stochastic events in the foreseeable future, nor did the petitioners provide any information regarding this. Consequently, in the absence of information identifying threats to the species and linking those threats to the rarity of the species, the Service does not consider rarity alone to be a threat.

The petition also asserts that the 2006 and 2007 Candidate Notices of Review for *C. c. rufa* failed to discuss impacts of climate change to shorebirds or account for the potential destruction of habitat due to sea-level rise and other factors. The petition also asserts that the Service must consider these factors in its analysis (Petition p. 4). However, the petition does not claim or provide any evidence that climate change is currently impacting, or is likely to impact, *C. c. roselaari* (Petition pp. 4–5) in the foreseeable future. Sea-level rise is addressed above under Factor A.

Besides sea-level rise, climate change could impact red knots as a consequence of the alteration of weather patterns, resulting in changes to habitat and environmental conditions, such as drying (and therefore potential loss) of breeding or intertidal habitat or alteration in prey availability. As an arctic nesting shorebird, *C. c. roselaari* is adapted to highly variable annual conditions on the breeding grounds (Meltofte *et al.* 2007, p. 11). In the short term, climatic amelioration could benefit Arctic shorebirds because earlier snowmelt and warmer summers increase both survival and productivity, for example by providing more food resources for adults and chicks on breeding grounds (Meltofte *et al.*

2007, p. 7). In the long term, habitat changes to both breeding and non-breeding areas could affect the subspecies negatively, but it is currently unknown to what extent shorebirds are able to adapt to rapidly changing climatic conditions (Moltofte *et al.* 2007, p. 34). In Alaska, *C. c. roselaari* currently nests in upland tundra habitat, which is drier than the Arctic coastal plain; thus, new habitat could become available on the Arctic coastal plain for this subspecies as habitat is lost in montane habitats. Weather variations are a natural occurrence and normally are not considered to be a threat to the persistence of a species unless the number of individuals is reduced to a very low level and the individuals are concentrated in an area that is subject to weather conditions that are likely to result in mortality or poor productivity or both (USFWS 2009, p. 30). While we expect climate change to continue into the future, and there could be a number of different types of effects on *C. c. roselaari* from climate change, the available information does not suggest that impacts from climate change are likely to result in population-level effects negatively impacting the subspecies. The petition does not present substantial information, nor do we have substantial information in our files, to suggest that climate change may threaten *C. c. roselaari* in the foreseeable future.

In summary, we find that the information provided in the petition, as well as other information in our files, does not present “substantial scientific or commercial information” indicating that the petitioned action of listing the *roselaari* subspecies may be warranted due to other natural or manmade factors affecting its continued existence.

Request to List a Broader Taxon Comprising Both the *rufa* and *roselaari* Subspecies

We next evaluated whether the petition presents substantial information that the petitioned action of listing a broader taxon comprising both the *rufa* and *roselaari* subspecies may be warranted. However, the only taxonomic unit broader than a “subspecies” is a “species,” and the petition does not seek to have the red knot species, which consists of six subspecies, listed. As there is no broader taxonomic unit consisting of the *C. c. rufa* and *roselaari* subspecies together, the Service concludes that the petitioned action of listing a broader taxon comprising both the *C. c. rufa* and *roselaari* subspecies does not involve a listable entity under the Act. Accordingly, based on the information set forth in the petition, information in the Service’s files, and other readily available information, the petition does not present substantial scientific or commercial information that the petitioned action of listing a broader taxon comprising the *rufa* and *roselaari* subspecies may be warranted.

Request for National Listing Based On Similarity of Appearance

The petitioner also seeks a “national listing based on similarity of appearance” under section 4(e) of the Act, “[g]iven the potential overlap of *rufa* and *roselaari* populations within the southeastern United States.” As a result, we have evaluated whether the petition presents substantial information that “a national listing” based on the similarity of appearance between the *C. c. rufa* and *C. c. roselaari* subspecies may be warranted.

Under section 4(e) of the Act, a species not otherwise qualifying as endangered or threatened may be listed based on its close resemblance to a listed species if certain circumstances exist. Specifically, section 4(e) of the Act states, “The Secretary may, by regulation of commerce or taking, and to the extent that he deems advisable, treat any species as an endangered species or threatened species even though it is not listed pursuant to section 4 of the Act if he finds that—

(A) such species so closely resembles in appearance, at the point in question, a species which has been listed pursuant to such section that enforcement personnel would have substantial difficulty in attempting to differentiate between the listed and unlisted species;

(B) the effect of this substantial difficulty is an additional threat to an endangered or threatened species; and

(C) such treatment of an unlisted species will substantially facilitate the enforcement and further the policy of this Act.”

In short, a threshold requirement for listing a species under section 4(e) of the Act is that the species must closely resemble in appearance “a species which has been listed” such that enforcement personnel would have substantial difficulty in differentiating the listed and unlisted species. In this instance, however, neither *C. c. rufa* or *C. c. roselaari* are listed under the Act. Therefore, the petition does not present a basis for concluding that a resemblance between the two subspecies would create difficulty for enforcement

personnel in attempting to differentiate between a listed and unlisted entity. More importantly, however, we are aware of no evidence, and none was provided by the petitioners, that commerce or taking of *C. c. rufa* (which, as a candidate species, may be listed in the near future) poses a threat to the subspecies, and that confusion with *C. c. roselaari* on the part of enforcement personnel contributes to this threat. All subspecies of red knots are protected by the MBTA and cannot legally be hunted, imported into, or exported from the United States. Accordingly, we find that the petition does not present substantial information that listing either *C. c. rufa* or *C. c. roselaari* based on their similarity of appearance to each other under section 4(e) of the Act may be warranted.

Finding

In summary, the petition does not present substantial information that the petitioned actions may be warranted. Specifically, the petition does not present substantial information that listing *C. c. roselaari* as endangered may be warranted because no specific information was provided on threats. The petition (p. 4) asserts that the Service should consider listing *C. c. roselaari* because its population “is small (probably less than 10,000) and therefore vulnerable.” However, uncertainty currently exists regarding the population size and trend of this subspecies. In addition, in the absence of information identifying threats to the subspecies and linking those threats to the rarity of the species, the Service does not consider rarity alone to be a threat.

On the basis of our determination under section 4(b)(3)(A) of the Act, we conclude that the petition does not present “substantial scientific or commercial information” to indicate that listing *C. c. roselaari* under the Act may be warranted. Although we will not review the status of the species at this time, we encourage interested parties to continue to gather data that will assist with the conservation of *C. c. roselaari*. The Service is continuing to monitor the subspecies, and studies are ongoing. If new information on the status or distribution of *C. c. roselaari* is revealed at the conclusion of current studies, we will evaluate the new information. If you wish to provide information regarding *C. c. roselaari*, you may submit your information or materials to the Field Supervisor, Fairbanks Fish and Wildlife Field Office (see **ADDRESSES**), at any time.

In addition, we find that the petition does not present substantial information that the petitioned action of listing “a broader taxon comprising both the *rufa* subspecies and the *roselaari* subspecies” may be warranted because the petitioned action does not involve a listable entity. Moreover, we find that the petition does not present substantial information that a “national listing based on similarity of appearance” under section 4(e) of the Act may be warranted because there is no listed species and, thus, no need for enforcement personnel to differentiate between a listed and unlisted entity. Additionally, the petition does not present substantial information that commerce or taking of *C. c. rufa* (which as a candidate species, may be listed in the near future) poses a threat to the subspecies, and that confusion with *C. c. roselaari* on the part of enforcement personnel contributes to this threat. All subspecies of red knots are protected by the MBTA and

cannot legally be hunted, imported into, or exported from the United States.

Accordingly, we find that the petition does not present substantial information that listing either *C. c. rufa* or *C. c. roselaari* based on their similarity of appearance to each other under section 4(e) of the Act may be warranted.

References Cited

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Fairbanks Fish and Wildlife Field Office (see **ADDRESSES**).

Authors

The primary authors of this notice are the staff members of the Fairbanks Fish and Wildlife Field Office (see **ADDRESSES**).

Authority

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: _____December 8, 2010_____

____/s/ Rowan W. Gould_____

Acting Director, U.S. Fish and Wildlife Service