DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R7–ES–2012–0062; 4500030113]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Prince of Wales Flying Squirrel as Threatened or 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 Prince of Wales flying squirrel (*Glaucomys sabrinus griseifrons*) as an endangered or threatened species under the Endangered Species Act of 1973, as amended (Act), and to designate critical habitat. 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, the Prince of Wales flying squirrel or its habitat at any time.

DATES: The finding announced in this document was made on August 29, 2012.

ADDRESSES: This finding is available on the Internet at *http://www.regulations.gov* at Docket Number FWS–R7–ES–2012–0062. 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, Juneau Fish and Wildlife Field Office, 3000 Vintage Blvd., Suite 201, Juneau, Alaska 99801. Please submit any new information, materials, comments, or questions concerning this finding to the above address.

FOR FURTHER INFORMATION CONTACT: Bill Hanson, Field Office Supervisor, of the Juneau Fish and Wildlife Field Office (see **ADDRESSES**), by telephone 907–780–1160, or by facsimile to 907–586–7099. 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 are to 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 are to 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 within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is ''that 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 or is available in our files, we are required to promptly conduct a species status review, which we subsequently summarize in our 12-month finding.

Petition History

On October 6, 2011, we received a petition, dated September 30, 2011, from Mark N. Salvo, WildEarth Guardians, requesting that the Prince of Wales flying squirrel be listed as an endangered or threatened species and that critical habitat be designated under the Act. The petition clearly identified itself as such and included the requisite identification information for the petitioner(s), as required by 50 CFR 424.14(a). In a December 20, 2011, letter to petitioner(s), we responded that we reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted. We also stated that when budget and workload enabled us to direct resources to the petition, we would make an initial finding on whether the petition presented substantial information indicating that the petitioned action may be warranted. We received funding in January 2012. This finding addresses the petition.

Previous Federal Action(s)

There are no previous Federal actions concerning the status of the Prince of Wales Flying squirrel under the Act.

Species Information

The Prince of Wales (POW) flying squirrel (*Glaucomys sabrinus griseifrons*) is a small (4.6 ounces [130 grams]), nocturnal, nonhibernating, arboreal rodent that is endemic to the southern part of the Alexander Archipelago in Southeast Alaska. It occurs on at least 11 islands, including POW (1,428,768 acres [ac] (578,202 hectares [ha])), Kosciusko (119,251 ac [48,259 ha]), Heceta (46,742 ac [18,916 ha]), Suemez (37,560 ac [15,200 ha]), Tuxekan (21,061 ac [8,523 ha]), Dall (162,766 ac [65,869 ha]), Orr (5,842 ac [2,364 ha]), El Capitan (1,562 ac [632 ha]) islands and three of the Barrier Islands (less than 1,236 ac [500 ha] total) (Demboski *et al.* 1998, p. 1774; Bidlack and Cook 2001, p. 284; Bidlack and Cook 2002, p. 248; MacDonald and Cook 2007, pp. 21–22, p. 172). All of these islands are part of a larger group of islands often referred to as the POW Complex (2,305,058 ac [932,824 ha]), but it is unknown whether the POW flying squirrel occurs on many of the smaller islands within the POW Complex. The only other subspecies (*G. s. zaphaeus*) of the northern flying squirrel that occurs in southeastern Alaska is restricted to the mainland and four adjacent islands (Mitkof, Wrangell, Etolin, and Revillagigedo islands) (Bidlack and Cook 2001, p. 286).

The distinctness of the POW flying squirrel as a subspecies is well documented. Howell (1934, p. 64) proposed the original subspecific designation based on the darker pelage coloration and whiter underparts of only two specimens from POW Island compared to those of the mainland subspecies (*G. s. zaphaeus*). In recent years, mitochondrial DNA and microsatellite data have confirmed that the POW flying squirrel is genetically distinct (Demboski *et al.* 1998, p. 1773; Bidlack and Cook 2001, pp. 286–288; Bidlack and Cook 2002, pp. 254–255). Base pair changes seen in mitochondrial sequences (Demboski *et al.* 1998, p. 1774; Bidlack and Cook 2001, p. 285), unique microsatellite alleles, and distinctive microsatellite frequencies (Bidlack and Cook 2002, pp. 250–252) in the POW Complex all indicate differentiation from the mainland squirrel populations. Therefore, we accept the characterization of the Prince of Wales flying squirrel as a subspecies of the northern flying squirrel.

There is little information about the historical range of the POW flying squirrel, but genetic studies indicate that flying squirrels probably colonized the archipelago after the last glacial maximum during the Holocene (Bidlack

and Cook 2001, p. 286; Bidlack and Cook 2002, pp. 253–254). These same genetic data suggest that POW flying squirrels have been isolated for enough time to observe a reduction in genetic variation (due to drift in smaller populations) and to accumulate and fix new mutations in the island populations (Bidlack and Cook 2002, p. 255). There is no evidence to support or refute the possibility that the historical range of the POW flying squirrel has changed since colonization and subspeciation occurred.

There is no information regarding population size or trend of the POW flying squirrel within any parts of its range. During the most recent status review of this insular subspecies, the International Union for the Conservation of Nature (Hafner *et al.* 1998, pp. 37–39) considered it to be ''threatened'' and NatureServe (2012 [online]) categorized it as ''imperiled,'' but both of these designations were predicated on the critical assumption that the POW flying squirrel requires old-growth forest to survive and reproduce successfully. While several studies investigating habitat relationships of the northern flying squirrel in the Pacific Northwest have concluded that optimal conditions for this species occur in old-growth forests (Carey 1995, p. 654; Carey *et al.* 1999, p. 41; and others, but see Rosenberg and Anthony 1992, p. 163), this does not appear to be the case for the POW flying squirrel in the coastal, temperate rainforests of Southeast Alaska (Smith *et al.* 2005, pp. 695–696).

Densities of the POW flying squirrel are among the highest flying squirrel densities recorded in North America (Smith 2007, p. 863). This subspecies occupies a variety of forested habitats with densities often increasing with forest complexity. Spring densities (number/ac) average 0.7 squirrels/ac (1.8 squirrels/ha) in upland old-growth forests of Sitka spruce (*Picea sitchensis*) and western hemlock (*Tsuga heterophylla*) and 0.5 squirrels/ac (1.2 squirrels/ha) in peatland-mixed-conifer forests (Smith and Nichols 2003, p. 1049). In autumn when dispersing juveniles are present, corresponding densities are 1.3 squirrels/ac (3.2 squirrels/ha) and 0.7 squirrels/ac (1.8 squirrels/ha), respectively (Smith and Nichols 2003, p. 1049). Overall, squirrel densities between the two habitat types do not differ significantly, but there is a significant habitat-by-season interaction with mean squirrel density in autumn higher in spruce-hemlock forests compared to peatland-mixed-conifer forests (Smith and Nichols 2003, p. 1049). There are no density estimates of the POW flying squirrel in managed forests, such as young or second growth stands.

Specific habitat correlates of density and use of the POW flying squirrel vary by season, forest type, and scale (Smith *et al.* 2004, pp. 667–668), but squirrel density and habitat use are most likely linked to resource availability at the scale of individual home ranges (Smith *et al.* 2005, p. 695). Smith *et al.* (2004, p. 667) found that 13 of 26 vegetative and structural habitat elements were statistically significant in explaining the variation in density and habitat use of the POW flying squirrel in two seasons (spring, autumn) and two old-growth forest types (upland old-growth, peatland-mixed-conifer). However, further analysis indicated that habitat use of the POW flying squirrel was best predicted by single habitat variables, as opposed to multivariate factors (Smith *et al.* 2005, pp. 694–695).

To sum, densities of large trees (greater than 29 inches [in] (74 centimeters [cm]) diameter at breast height [dbh]) and understory cover of blueberry and huckleberry shrubs (*Vaccinium* species; hereafter *Vaccinium*) explain much of the variation in microhabitat use by POW flying squirrels; as large tree density and *Vaccinium* cover increased, capture rates of squirrels also increased (Smith *et al.* 2004, p. 667; Smith *et al.* 2005, p. 689). This result differs from patterns of habitat use reported for flying squirrel populations in the Pacific Northwest, which clearly prefer complex, multi factorial habitat conditions that are characteristic of old-growth forests (Carey *et al.* 1999, pp. 24–25, 39–40). Smith *et al.* (2005, p. 696) proposed that the diet of the POW flying squirrel and the community structure of arboreal rodents (although not mutually exclusive), especially squirrels (Family Sciuridae), may be sufficiently different than those in the Pacific Northwest to facilitate a more general lifestyle.

Despite the high number of endemic species in Southeast Alaska, the small mammal community is relatively low in numbers or variety of species compared to the coniferous forests of Washington and Oregon where at least 57 native terrestrial mammal species have been observed (Carey 1995, p. 653; Smith and Nichols 2003, p. 1054; MacDonald and Cook 2007, pp. 15–17). Only 15 native mammal species have been documented on POW Island (MacDonald and Cook 2007, p. 142), and the POW flying squirrel is the only arboreal or forest-floor squirrel (MacDonald and Cook 2007 p. 177). Across most of the range of the northern flying squirrel, the American red squirrel (*Tamiasciurus hudsonicus*) occurs, and the two species directly compete for food and habitat resources. On POW Island, however, red squirrels are not present, providing the POW flying squirrel with almost exclusive access to many resources important to its life cycle (Smith and Nichols 2003, p. 1054; MacDonald and Cook 2007, pp. 25–27). Undoubtedly, this competitive release from interspecific competition further distinguishes the flying squirrels of Southeast Alaska from those in the Pacific Northwest.

In most parts of its range, the northern flying squirrel feeds on truffles and plays an important role in dispersing their spores in coniferous forest ecosystems (Weigl 2007, p. 900). In contrast, the POW flying squirrel relies less on truffles and feeds on a greater diversity of food items than other subspecies of northern flying squirrel (Maser *et al.* 1986, p. 2087; Carey *et al.* 1999, p. 46; Pyare *et al.* 2002, p. 100; Flaherty *et al.* 2010, p. 85). Stable isotope and fecal analyses show that the main dietary items of POW flying squirrels were conifer seeds, lichens, and fungi, all of which are more abundant in old-growth than in young-growth forests (Flaherty *et al.* 2010, p. 85). Truffles appear to be a moderately important component of the POW flying squirrel diet with spores identified in about 50 percent of fecal samples (Pyare *et al.* 2002, p. 100). However, *Elaphomyces,* the most common fungus on POW Island, has minimal nutritional value for squirrels (Flaherty *et al.* 2010, pp. 86–87). Overall, the POW flying squirrel has a far less specialized diet than the northern flying squirrels of the Pacific Northwest. This likely allows them to utilize a greater diversity of forested habitats, especially when coupled with the absence of competition with the red squirrel.

The northern flying squirrel uses dens for shelter and to carry out important ecological and life history functions such as avoiding predators, caching food, thermoregulating, and reproducing. Flying squirrels use multiple dens within their home range, or core den area, and, therefore, the availability of suitable den sites on the landscape is strongly linked to the persistence of local squirrel populations. Pyare *et al.* (2010, p. 891) found that POW flying squirrels den in cavities in live trees (42 percent) or snags (51 percent), rarely constructing their own nests (2 percent) or using the ground (3 percent). Positive correlates of den trees used by POW flying squirrels include diameter at breast height (dbh) for both live trees (mean dbh = 40 in [101 cm]) and snags (mean dbh = 29 in

[73 cm]), number of conks (hard, shelf-like structure of wood-decaying fungi found on stumps, logs, or trees) and bole entries (openings in the trunk or main stem of a tree) in live trees, and decay class for snags (Pyare *et al.* 2010, p. 892).

In their study, the authors found that squirrels used 3.5–7.1 dens/month and moved 195–711 yards (yd [178–650 meters (m)]) between dens (Pyare *et al.* 2010, p. 891). Compared to northern flying squirrels in other parts of their range, adult POW flying squirrels occupy smaller core denning areas, yet use more den trees per month (Pyare *et al.* 2010, p. 891). This finding coupled with the nearly exclusive use of cavities for denning (93 percent) suggests that suitable cavities were readily available to squirrels despite the intensely managed landscape in which the study was conducted (Pyare *et al.* 2010, p. 893). At a broader scale, POW flying squirrels den in larger forested habitat patches, but with greater amounts of edge, than what was available on the landscape (Pyare *et al.* 2010, p. 893). Results of this study suggest that despite the need for larger trees for denning, the POW flying squirrel is not limited by availability or suitability of cavities or den sites, even in the small and insular habitat fragments in their study area, and is capable of moving large distances between den sites.

Although the POW flying squirrel occupies a variety of forested habitats to meet its life-history needs, the persistence of squirrels, especially in a managed landscape, relies heavily on their ability to disperse to suitable habitats. Flying squirrels can glide from one tree to another or can walk or run on the ground, but Flaherty *et al.* 2010, p. 1051) speculated that ground travel was more energetically costly than gliding. High forest canopies and relatively open under- and mid-story layers provide squirrels with high launch points and unobstructed gliding space, both of which allow for longer glides and less energy expenditure (Flaherty *et al.* 2008, p. 1051). Vernes (2001 [in Flaherty *et al.* 2008, p. 1057]) determined that squirrels will glide across a distance that is twice as long as the height of their launch; mean tree height of Sitka spruce and western hemlock in Southeast Alaska is 41.2 yd (37.7 m).

Flaherty *et al.* (2008, pp. 1055–1057) estimated the perceptual range, the distance at which an animal can perceive a particular habitat or landscape feature (Lima and Zollner 1996 [in Flaherty *et al.* 2008, p. 1051]), of a POW flying squirrel to be 109–164 yd (100–150 m) in clearcuts and 27–55 yd (25–50 m) in second-growth forests, both far smaller than the average width of managed stands on POW Island (about 394 yd [360 m]). The authors reported, however, that the ability of individual squirrels to select and orient themselves to the shortest distance towards a suitable habitat patch is most influenced by factors affecting sense of smell capabilities (e.g., precipitation, wind speed), not visual or auditory cues (Flaherty *et al.* 2008, p. 1055).

While there is presumably a fragmentation threshold in which flying squirrel dispersal would cease (or be drastically reduced), there is no information available that quantifies this threshold, and there is no evidence that this threshold has been reached on the highly managed forested landscapes within the POW Complex. Bidlack and Cook (2002, p. 256) found that there is contemporary gene flow among squirrel populations in the POW Complex, although that flow is primarily affected by distance between populations, and Pyare *et al.* (2010, p. 891) estimated very large core den areas and movements of juvenile POW flying squirrels across a highly fragmented landscape, suggesting that dispersal is occurring and is not a limiting factor to population persistence.

The northern flying squirrel has several life-history traits characteristic of a K-selected species (Smith 2007, p. 862), which produce few offspring and live in stable environments. It is relatively long-lived (greater than 7 years), produces small litters (usually 2–3 young) after a long gestation period (37–42 days), and exhibits density-dependent population growth (Fryxell *et al.* 1998 [in Smith 2007, p. 862; Lehmkuhl *et al.* 2006, p. 589). Consequently, annual survival rates are expected to be high. Accordingly, Smith and Nichols (2003, pp. 1050–1052) estimated minimum survival on POW Island to be 16.7–65.7 percent in summer and 43.9–60.4 percent in winter with mean recapture probability of 0.33 (range = 0.30–0.39; p. 1049). In the same study, there was weak evidence suggesting that productivity was higher in upland-old-growth forest than in peatland-mixed-conifer forest. The number of reproductive females captured was greater in upland-old-growth (3.9/trapping grid versus 2.1/trapping grid in peatland-mixed-conifer), but there was no difference between the percentage of reproductive females captured in either habitat (75.5 percent in upland-old-growth, 75.9 percent in peatland-mixed-conifer (Smith and Nichols 2003, p. 1050)).

Evaluation of Information for This Finding

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, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant enough that it may drive or contribute to the risk of extinction of the species such that the species may warrant listing as a threatened or endangered species as those terms are defined by the Act, this does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively may not be sufficient to compel a finding that listing may be warranted. The information must include evidence sufficient to suggest that these factors may be operative threats that act on the species to the point that the species may meet the definition of a threatened or endangered species under the Act.

In making this 90-day finding, we evaluated whether or not information regarding the threats to the POW flying squirrel, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action 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

Information Provided in the Petition

According to the petitioner, the POW flying squirrel is an island endemic species that occupies forest habitats and, therefore, is vulnerable to negative impacts of logging and associated habitat fragmentation. There is a long history of logging in Southeast Alaska, especially on POW Island where roughly 39 percent of the old-growth forest has been harvested. This has resulted in a complex matrix of forest stands of varying age, muskeg (bog, marsh, or peatland; an area of mosses, sedges, and open growth of scrubby trees), less productive forests, and the presence of roads (WildEarth Guardians 2011, p. 2). The petitioner raises concern that the composition and spatial configuration of remaining forests within the range of the POW flying squirrel is not sufficient for the squirrel to meet its life-history needs and, therefore, to persist into the future.

There are two pinchpoints, or narrow land corridors connecting larger areas of old-growth forest, on POW Island that are currently not protected and, therefore, are susceptible to future development. The Neck Lake and Sulzer Portage areas are nearly surrounded by private lands that have previously been subject to intense logging. These areas are connected to fragments of old-growth habitat intermixed with water, rugged terrain, and logged stands. All of these features are implicated by the petitioner in preventing movement of squirrels across the pinchpoints. The petitioner suggests that if these two pinchpoints are developed and the forest is removed, flying squirrel populations on either side of the pinchpoints may become isolated from one another. Although there is an existing series of old-growth reserves in Tongass National Forest lands on POW Island, flying squirrels may have a difficult time moving among these reserves especially if additional logging occurs as is planned within the next 100 years.

Evaluation of Information Provided in the Petition and Available in Service Files

The petitioner raises three primary concerns related to the destruction, modification, or curtailment of habitat or range of the POW flying squirrel, none of which were supported by the information in our files or the petition itself. First, the petitioner suggests that current and future forest composition within the POW Complex is not adequate for the persistence of the POW flying squirrel, assuming that this subspecies is an old-growth obligate. Second, the petitioner identified lack of connectivity among forest habitat patches and habitat fragmentation as factors reducing the population viability and long-term persistence of POW flying squirrels. Third, the petitioner raises concern about possible future development and additional logging within the range of the POW flying squirrel. We do not find substantial information supporting any of these assertions related to this threat.

There are many definitions for old-growth forest. Generally, we consider old-growth forests to be in a late successional stage of forest development with both vertical and horizontal structural diversity including live trees and snags of a minimum number and size, canopy conditions with multiple layers, and logs and large woody debris (often on the forest floor). These forests are complex and involve several habitat variables. Species that rely on old-growth forests typically require habitat features of similar complexity.

The POW flying squirrel occupies a diversity of forested habitats within its range. Although squirrel densities are slightly higher in productive, upland old-growth forests than in lower productive, peatland-mixed-conifer forests in Southeast Alaska (Smith and Nichols 2003, p. 1049), two habitat features alone—density of large trees and understory cover of *Vaccinium*—explain much of the variation in habitat use of the POW flying squirrel (Smith *et al.* 2004, pp. 693–694). Smith *et al.* (2005) modeled habitat use of the POW flying squirrel and determined that complex models containing multiple variables performed poorly compared to simple models of individual habitat variables (i.e., looking at one habitat characteristic at a time). The lack of complexity of habitat conditions used by the POW flying squirrel suggests that this species is not an old-growth obligate species even though squirrel densities are often higher in old-growth forests. Therefore, unlike flying squirrels in other coniferous forests, especially in the Pacific Northwest (Carey *et al.* 1999, pp. 24–25, 39–40), the information suggests that the POW flying squirrel is not an old-growth obligate species but uses a wider range of habitat types successfully. Furthermore, densities of the POW flying squirrel in a variety of forested habitats are among the highest flying squirrel densities recorded in North America (Smith 2007, p. 863). Based on the information in our files, any population projections of the POW flying squirrel based on the assumption that they depend on old growth and any loss of old growth equates to a loss in POW flying squirrels are not valid.

We acknowledge that population density is not necessarily a reliable indicator of habitat quality. Smith and Nichols (2003, p. 1052) captured more reproductive females in upland-old-growth forest (3.9/trapping grid) compared to peatland-mixed-conifer forest (2.1/trapping grid in peatland-mixed-conifer). Based on this finding, Smith and Person (2007, p. 632) speculated that flying squirrels occupying peatland-mixed-conifer forests in some years represent population sinks that are sustained by immigration. However, Smith and Nichols (2003, p. 1052) reported no difference between the percentage of reproductive females captured in either habitat (75.5 percent in upland-old-growth, 75.9 percent in peatland-mixed-conifer), and, therefore, it is difficult to interpret the results of the study as they relate to identifying population sources, sinks, and habitat selection of the POW flying squirrel.

There is insufficient and mixed evidence that fragmentation and lack of connectivity influences habitat use of POW flying squirrels. In a heavily managed landscape, POW flying squirrels chose to den in areas with larger habitat patches, but also greater absolute amounts of edge than what was available across the landscape (Pyare *et al.* 2010, p. 894). Similarly, POW flying squirrels were more likely to be captured in traps on the forest edge compared to forest interior (Smith *et al.* 2004, p. 666). Pyare *et al.* (2010) noted that radio-collared squirrels moved large distances to find suitable den sites (p. 891), traveling through linear old-growth fragments with a high edge-to-area ratio at rates nearly equivalent to those in more interior old-growth forest (p. 894). These findings indicate that squirrel habitat use is not negatively correlated with forest edge or current levels of fragmentation on the POW Complex. Furthermore, despite the intensive and extensive logging within this area over the last 50 years, there is contemporary gene flow among populations of POW flying squirrels (Bidlack and Cook 2002, pp. 250–252), suggesting that there are currently few connectivity barriers within the range of this subspecies.

The Tongass Land and Resource Management Plan (2008, p. 2–4; hereafter, Tongass Land Management Plan; TLMP), which outlines management of 80 percent of the lands in Southeast Alaska, includes a conservation strategy aimed to maintain

a forest-wide system of old-growth and other forest habitats to sustain old-growth associated species and resources. The strategy includes a series of small (less than 1,606 ac [650 ha]), medium (about 10,008 ac [4050 ha]), and large reserves (at least 40,031 ac [16,200 ha]), nondeveloped areas (e.g., Wilderness and Research Natural areas), and beach, estuary, and riparian corridors (TLMP Final Environmental Impact Statement 2008, p. D–6). Within the POW Complex, there are 95 reserves consisting of 65 small, 24 medium, and 4 large reserves totaling 325,081 ac (131,556 ha) and 4 designated Wilderness Areas protecting 229,630 ac (92,928 ha) on Federal land. Across all Federal and non-Federal lands within the POW Complex, approximately half (44%) of the land is either legally (325,398 ac [131,684 ha] or administratively (691,102 ac [279,679 ha] protected and the remainder is or may be developed (1,288,563 ac [521,463 ha]).

Although the efficacy of many aspects of the conservation strategy remains untested, the POW flying squirrel was a design species in developing the criteria for habitat conservation areas, specifically the small reserves (Julin 1997, p. 19). Smith and Person (2007, p. 627) assessed the size and composition of these small reserves by modeling population viability of the POW flying squirrel in two habitat types (upland-old-growth, peatland-mixed-conifer). The primary purpose of this modeling exercise was to evaluate the potential of only individual small habitat reserves for flying squirrel population viability. The authors did not include medium and large reserves or corridors in their analysis. Furthermore, they assumed no immigration or emigration among small reserves. However, based on POW flying squirrel movements (Pyare *et al.* 2010, p. 891) and contemporary gene flow (Bidlack and Cook 2002, p. 256), this was not a valid assumption. Despite these limitations, modeled estimates of time to extinction of POW flying squirrel were high, ranging from 118 to 507 years (or approximately 12 to 50 generations) depending on habitat type and percent of upland-old-growth within the habitat patch (Smith and Person 2007, pp. 630–631) and intrinsic rates of population growth indicated stable or increasing populations (greater than zero) regardless of habitat type (p. 629). Therefore, in the absence of trend information or an explicit field-based test of the assumptions or reserve criteria and because the model assumptions were very conservative (i.e., only small reserves available, no dispersal), the information available suggests that the conservation strategy, if implemented properly, will provide sufficient suitable habitat for population viability, and for connectivity between and among forest reserves and habitat fragments in the POW Complex. Petitioners did not provide any information to change this analysis or refute the conservation strategy.

Although the conservation strategy does not extend to non-Tongass lands, the majority of land in the POW Complex (~97 percent) is part of the Tongass National Forest and, therefore, is subject to the standards and guidelines described in the plan. The petition raises concern that the non-Federal lands on POW Island are not protected currently and, therefore, are available for development; other than the assertion by the petitioners, there is no information that suggests that this lack of protection or the non-Federal land ownership suffice as substantial information suggesting a threat to the POW flying squirrel, especially given the other land protections and management prescriptions on Federal lands within the range of this subspecies and the overall amount of existing forested land within the range of this subspecies (722,010 ha; Table 2 in petition, p. 20).

The petitioner states that a flawed assumption of the Tongass Land Management Plan is that second-growth forests will provide lesser but sufficient quality habitat for the POW flying squirrel (petition, p. 19). This statement was uncited, and we were unable to find reference to it within the management plan itself. Regardless, we did not find any information evaluating the use of second-growth forested stands specifically by POW flying squirrels, but Flaherty *et al.* (2010, p. 87) reported that low availability of some food items in second-growth forests may constrain dispersal of squirrels across these habitats. We agree that movement of POW flying squirrels between and among forest patches on the landscape is critical to their persistence, but squirrels appear to be dispersing successfully based on radio-marked individuals (Pyare *et al.* 2010, p. 891) and contemporary gene flow among populations in the POW Complex (Bidlack and Cook 2002, pp. 250–252). Furthermore, density and demography of northern flying squirrels in young and old-growth forests of the Pacific Northwest were similar (Rosenberg and Anthony 1992, p. 163; Carey 1995, p. 654; Lehmkuhl *et al.* 2006, p. 594).

In summary, we found that the information provided in the petition, as well as other information in our files, does not suggest that the destruction, modification, or curtailment of habitat or range of the POW flying squirrel may be a threat to the subspecies because it is a habitat opportunist, using a variety of forested habitats, does not avoid forest edges, is apparently dispersing successfully across the current landscape, and is presumably benefiting from the forest reserve system, which provides considerable amounts of forested habitat throughout its range. We conclude that the information provided in the petition describing this potential threat was inconsistent with the published literature and available reports in our files.

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

Information Provided in the Petition

The petitioner raises concern about impacts of hunting on POW flying squirrel populations, especially given some of the K-selected life-history traits of this subspecies and the presumed small population size.

Evaluation of Information Provided in the Petition and Available in Service Files

The State of Alaska does not regulate or require reporting of take of POW flying squirrels. Additionally, we are not aware of targeted hunting effort of squirrels within the POW Complex, as suggested in the petition. Although POW flying squirrels may be taken occasionally by recreational or subsistence hunters, we do not have any information to suggest that hunting pressure on squirrels could be having a population-level impact within the POW Complex. Given their small size and nocturnal habits, it is unlikely that flying squirrels are sought by hunters for meat or fur, and we are not aware of any cultural significance of the flying squirrel to First Nations in Southeast Alaska.

In summary, we found 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 overutilization for commercial, recreational, scientific, or educational purposes is a threat to the POW flying squirrel. Further, we are not aware of any other potential threats to the POW flying squirrel as a result of recreational or subsistence hunters within the POW Complex.

C. Disease or Predation.

Information Provided in the Petition

The petitioner presents information to suggest that habitat destruction and fragmentation may result in increased predation on the POW flying squirrel. Reduction of canopy cover reduces protection of the POW flying squirrel when gliding for movement and may force individuals to resort to travel on the ground, increasing their exposure to predators. The petitioner identifies several potential nonnative predators including the raccoon (*Procyon lotor*), American marten (*Martes americana*), and feral cats and dogs.

Evaluation of Information Provided in the Petition and Available in Service Files

POW flying squirrels do not avoid natural or anthropogenic forest edges; in fact, Pyare *et al.* (2010, p. 894) found that they choose to den in habitat patches with greater absolute amounts of edge than what was available on the landscape and Smith *et al.* (2004, p. 666) reported greater capture rates of squirrels on the forest edge than in interior forest. Therefore, we did not find evidence that squirrels are avoiding forest edges, suggesting that neither predation risk is driving squirrel behavior nor is predation increased due to greater amounts of forest edge that may result from habitat fragmentation.

Raccoons and marten have been introduced to some islands within the POW Complex, but neither appears to be having population-level impacts on the POW flying squirrel. In 1941, eight raccoons were introduced to a small island in El Capitan Passage on the west coast of POW Island. The transplant was apparently successful with occasional sightings of raccoons on POW Island as recently as 2001 (Paul 2009, p. 110). However, this population of raccoons is small and localized, and it is unlikely to be having a population-level impact on POW flying squirrels on the POW Complex. In 1934, ten marten were introduced to POW Island for fur trapping opportunities. This species is now well-established in the area; from 2001 to 2006, trappers reported 323–1,026 marten taken annually on POW Island (Paul 2009, pp. 104–105). However, Flynn *et al.* (2004, p. 23) estimated that POW flying squirrel was a small proportion (5–9 percent varying by year) of the diet of marten on POW Island, where they feed more commonly on salmon, voles, mice, and berries. The petitioner did not provide, and we have no evidence in our files, indicating that predation from feral cats or dogs is occurring. The barred owl (*Strix varia*) is a new inhabitant of Southeast Alaska, including the POW Complex (Kissling and Lewis 2009, p. 80). This species likely preys on the POW flying squirrel, but we do not have any quantitative or qualitative information regarding the diet of the barred owl in this area and, therefore, cannot evaluate any potential impacts on POW flying squirrel populations. However, we are not aware of any evidence suggesting that barred owls are having a population level impact.

We did not find any information describing existing or potential disease impacts to POW flying squirrels. In areas where the southern flying squirrel (*G. volans*) and the northern flying squirrel coexist (e.g., the southern Appalachians), the southern species can infect the northern species with a nematode (*Strongyloides robustus*) that can cause huge die-offs of northern flying squirrels (Weigl 2007, pp. 901–902). However, we are unaware of any such occurrence in POW flying squirrel populations in Southeast Alaska.

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 disease or predation may be a threat to the POW flying squirrel. The POW flying squirrel does not avoid forest edges where predation risk is assumed to be greatest and is not impacted at the population level by introduced predators within the POW Complex. We conclude that the information presented in the petition does not establish a connection between habitat fragmentation and predation risk to the POW flying squirrel. The potential predators identified in the petition are not widespread or established and do not feed on squirrels regularly. Furthermore, POW flying squirrels do not avoid edges and may in fact select for them, suggesting that individual squirrels do not perceive increased predation risk at or near forest edges, as stated in the petition. We did not find any information describing existing or potential disease impacts to POW flying squirrels.

D. The Inadequacy of Existing Regulatory Mechanisms.

Information Provided in the Petition

The petitioner identifies perceived inadequacies of the most recent Tongass Land Management Plan (2008) to protect old-growth forest habitats and reserve connectivity required to support metapopulations of POW flying squirrels across their range. The primary concern described in the petition relates to the efficacy of small old-growth reserves and the ability of POW flying squirrels to glide across large clearcuts. Flaherty *et al.* (2008, p. 1055) concluded that the perceptual range, the distance at which an animal can perceive a particular habitat or landscape feature (Lima and Zollner 1996 [in Flaherty *et al.* 2008, p. 1051]) of the POW flying squirrel is 109–164 yd (100–150 m) in clearcuts and 27–55 yd (25–50 m) in second-growth forest. Both distances are shorter than the average width of clearcuts on POW Island (~394 yd [360 m]). The petitioner asserts that if individuals are not capable or willing to cross large openings, squirrel populations will become isolated and may be extirpated.

In addition to POW flying squirrel movement and habitat connectivity, the petitioner raises concern about forest composition, patch size, and land ownership and population viability of squirrels. Old-growth forests are not equal in ecological value; there are structural differences between old-growth forests of mixed conifer, peatland, and Sitka spruce and western hemlock. The petitioner claims that the POW flying squirrel may utilize second-growth forests, but they depend on old-growth forests for their survival. Private lands are not subject to the same forest management practices as those outlined in the Tongass Land Management Plan, and, therefore, these private lands are not protected and are subject to development.

Evaluation of Information Provided in the Petition and Available in Service Files

Similar to Factor A, the petitioner assumes that the POW flying squirrel requires productive, old-growth forest to meet their life-history needs, including survival, reproduction, and movement, and we did not find substantial information in the petition or our files to support this assumption. The Tongass Land Management Plan is designed to provide adequate amounts of forest habitat and connectivity of suitable structure and composition to maintain viable populations of the POW flying squirrel. Smith and Person (2007, pp. 631–633) concluded that small old-growth reserves are too small to assure a high probability (greater than 90 percent) of sustaining flying squirrel populations, but their simulations relied on the unrealistic assumption of no immigration and do not consider the other matrix components, such as medium and large reserves and stream and beach corridors (see Factor A for details on the composition of reserves and land status). As noted above in

Factor A, the majority (~97 percent) of land within the POW Complex is subject to prescriptions and guidelines outlined in the Tongass Land Management Plan; a very small proportion of the land is privately owned. We do not believe that the lack of protection of these non-Federal lands presents a threat to the POW flying squirrel.

We lack population trend estimates of the POW flying squirrel and, therefore, are unable to evaluate reliably the efficacy of forest management practices or critical components of the conservation strategy for squirrel populations in the POW Complex. However, over the last 50–60 years, extensive timber harvesting has occurred within the POW Complex, reducing the total amount of old-growth forest from 989,778 ac (400,549 ha) to 722,010 ac (292,187 ha; 27 percent, as of 2006; in petition, p. 20) with most of the logging occurring prior to the implementation of the conservation strategy in 1997. The POW flying squirrel not only persisted during this period of heavy timber removal and no conservation strategy, but also appears to be utilizing and dispersing successfully across the managed landscape (Bidlack and Cook 2002, pp. 250–252; Smith *et al.* 2003, p. 1049; Pyare *et al.* 2010, pp. 889–891).

In light of this information, we find that the information provided in the petition, as well as other information in our files, does not suggest that the inadequacy of existing regulatory mechanisms may be a threat to the POW flying squirrel. The POW flying squirrel is not an old-growth obligate species, is moving and dispersing successfully across the managed landscape, and is persisting in apparently viable populations under the existing conservation strategy and management guidelines in the Tongass Land Management Plan. As in the analysis for Factor A, we conclude that the information provided in the petition describing this threat relies on unsupported assumptions and does not fully recognize all components of the conservation strategy under the Tongass Land Management Plan.

E. Other Natural or Manmade Factors Affecting Its Continued Existence

Information Provided in the Petition

The petitioner identified climate change and the introduction of the American red squirrel (*Tamiasciurus hudsonicus*) as potential threats to persistence of POW flying squirrels. Specifically, increased temperatures and fires, heavy winds, warmer sea temperatures and sea level rise were proposed as environmental changes that may result from changing climatic conditions and may affect POW flying squirrels. The red squirrel was implicated as a competitor to the POW flying squirrel for some food resources.

Evaluation of Information Provided in the Petition and Available in Service Files

Most climate models for Southeast Alaska predict warmer and wetter weather with increases in rainfall and decreases in snowfall, especially at lower elevations, over the next 50–100 years (Bonsal and Prowse 2006, pp. 33–40). Despite higher projected precipitation, forests may be drier during summer months, and, therefore, fire, which currently is very uncommon in Southeast Alaska, may occur more often (Haufler *et al.* 2010, p. 18). However, it is difficult to assess potential impacts of increased fire on POW flying squirrel populations. Fire is a common event across most of the range of the northern flying squirrel, which encompasses the boreal, coniferous, and mixed forests of the northern United States and Canada and the slopes of the mountains of the east and west, and it is quite clear that this species has experienced a number of range contractions in the past (Weigl 2007, pp. 897–898).

In Southeast Alaska, loss of snow cover at low elevations is causing changes in the distribution and decreasing the survival of yellow cedar (*Callitropsis nootkatensis;* Haufler *et al.* 2010, pp. 19–20). The resulting die-offs of yellow cedar stands temporarily increase the availability of snags for denning squirrels, but also provide fuel for potential fire events in the future. However, yellow cedar stands are not common on the POW Complex (1.3 percent; 29,425 ac [11,908 ha]), and, therefore, loss of these stands to fire, should it occur, would not result in a substantial loss of habitat for the flying squirrel. We did not find any information to connect sea level rise or warmer sea temperatures to POW flying squirrel ecology or persistence. Therefore, impacts to the POW flying squirrel from predicted changes in climate do not appear to be a population-level threat to the subspecies.

The petitioner stated that the American red squirrel, a potential competitor to the POW flying squirrel, was introduced to POW Island, but no citation was provided in support of this claim (petition, p. 21), nor have we found any information supporting this statement in the literature or our files (e.g., Paul 2009, p. 111). Furthermore, MacDonald and Cook (2007, p. 26) do not include POW Island or Complex in the current range of the red squirrel. The red squirrel was introduced to other large islands in Southeast Alaska, such as, Admiralty, Baranof, and Chichagof islands, but there is no mention of any islands within the range of the POW flying squirrel (Paul 2009, p. 111).

In summary, we find that neither the information provided in the petition nor any other information in our files presents substantial scientific or commercial information indicates that other natural or manmade factors may be a threat to the POW flying squirrel. Potential impacts from changes in climate are contradictory and difficult to evaluate reliably, and the information presented in the petition regarding changes in climate is speculative and unsubstantiated. We found no reliable information indicating that red squirrels have been introduced within the range of the POW flying squirrel, contrary to what is stated in the petition.

Finding

In summary, the petition does not present substantial information that listing may be warranted. The POW flying squirrel is a habitat opportunist that occupies a diversity of forested habitats (Smith *et al.* 2003, p. 1049), eats a variety of food items (Flaherty *et al.* 2010, p. 85), moves among remnant forest patches (Pyare *et al.* 2010, pp. 889–891), and disperses successfully across the landscape (Bidlack and Cook 2002, pp. 250–252). In the absence of population trend of the POW flying squirrel, the petitioner relies heavily on a presumption of dependency of this species on old-growth habitats and its inability to disperse across the forest openings caused by clearcuts. We find most of the information to be speculative or unsubstantiated even when augmented with the information in our files. This is especially true when considering the protections afforded the POW flying squirrel under the conservation strategy outlined in the Tongass Land Management Plan. Neither the information in the petition nor the information available in our files suggest that the Prince of Wales flying squirrel may be in danger of extinction or likely to become so now or in the foreseeable future.

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 the Prince of Wales flying squirrel under the Act as a threatened or endangered species may be warranted at this time. 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 the Prince of Wales flying squirrel. If you wish to provide information regarding the Prince of Wales flying squirrel, you may submit your information or materials to the Field Supervisor, Juneau Fish and Wildlife Field Office (see **ADDRESSES**), at any time.

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Juneau Fish and Wildlife Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Author

The primary authors of this notice are the staff members of the Juneau 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: August 20, 2012.

Benjamin Tuggle,

Acting Director, U.S. Fish and Wildlife Service.

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