

use more than one nest per season, and nests may remain intact for 3 to 5 years. Consequently, the fact that only 3 remnant nests and 18 previously unreported nests in an area that formerly had 89 nests may represent a significant reduction in the number of western gray squirrel nests in the Methow Valley, possibly suggesting a corresponding population decline. Additional nest surveys in Chelan County, not previously surveyed, located seven previously unreported nests, three western gray squirrels, and one western gray squirrel skin (no body) (M. Linders, pers. comm. 2003d).

The North cascades population occurs in an ecological setting that differs from the Puget Trough area. The native range of oaks extended only into southeastern Yakima County with a patchy distribution in central Yakima County, central Kittitas County, and northeastern Pierce County (Stein 1990). The range expansion northward from Yakima County required adaptations to habitats lacking oaks, the main source of winter foods for this subspecies in most of its range.

Couch (1928) describes the range of the "silver gray squirrel" as being known from Goldendale (Klickitat County) to Lake Chelan (Chelan County). Taylor and Shaw (1929) describe the range of the western gray squirrel as ranging along the eastern edge of the Cascades north to Lake Chelan. There are verified (reported by reliable biologists or other knowledgeable individuals) western gray squirrel sightings recorded for Chelan County from 1938 in the WDFW Natural Heritage Database (WDFW 2002). Booth (1947) notes records from Lake Chelan. Larrison (1970) describes the range as including the lower east slopes of the Cascades to Lake Chelan. He also notes that, while western gray squirrels are most numerous in the oak woods, they are spotty and scarce elsewhere in their range.

The western gray squirrel range extension into Okanogan County may have occurred in response to groves of English walnut (*Juglans regia*) and black walnut (*J. nigra*) planted during the 1940s and 1950s (WDW 1993). Stream (1993) conducted interviews, compiled data from WDW wildlife data printouts, literature reports, and old files from the WDW Yakima Regional office and concluded that the western gray squirrel was native to the east slopes of the Cascade Mountains. He notes that there was "apparently a native population in Chelan County, especially around Lake Chelan," but that the documentation was not clear. Although the predominant habitat used by western

gray squirrels was the oak/pine associations in Yakima County, the oak association was not found where the western gray squirrels occurred around Lake Chelan. The interviews revealed that English walnut trees were planted from 1915 to 1920, and by the 1940s, the western gray squirrel was expanding its range northward due to these planted mast-producing trees. By the 1960s, western gray squirrels were showing up in canyons where black walnut trees were planted in the 1940s.

Western gray squirrels were present at Lake Chelan at least as early as the 1920s, and may have been expanding northward before mast-producing trees planted in nut orchards began producing. Their secretive behavior and low population densities may have made them hard to see. Although the nut orchards probably stimulated the northward expansion and helped population sizes increase, western gray squirrels were also found in natural habitats. Western gray squirrels were regularly seen on Chelan Butte (southeast side of Lake Chelan) in the 1960s and in Purteman Gulch (northeast end of Lake Chelan), but were no longer found there after fires burned the habitat. In the late 1960s, a western gray squirrel nest was found on a pine tree branch in Ribbon Cliff Canyon (along the Columbia River north of Entiat). Western gray squirrels were using pine trees and bigleaf maples (*Acer macrophyllum*) for food. A few western gray squirrels were found in Stehekin (northwestern end of Lake Chelan in Chelan County), but could not survive because of the harsh weather (Mil Sharp, retired WDW wildlife agent, pers. comm. 1992, as cited in Stream 1993).

#### Distinct Population Segment Review

Under the Act, we must consider for listing any species, subspecies, or any distinct population segments of vertebrates if sufficient information exists to indicate that such action may be warranted. We, along with the National Marine Fisheries Service (National Oceanic and Atmospheric Administration-Fisheries), developed a joint policy that addresses the recognition of DPS for potential listing actions (61 FR 4722). The policy allows for more refined application of the Act that better reflects the biological needs of a part of the taxon being considered, and avoids inclusion of entities that do not require the Act's protective measures.

Under our policy, we use two elements to assess whether a population segment under consideration for listing may be recognized as a DPS. These

elements are (1) discreteness of the population segment in relation to the remainder of the species to which it belongs; and (2) the significance of the population segment to the taxon to which it belongs. If we determine that a population segment being considered for listing meets the discreteness and significance standards, then the level of threat to that population segment is evaluated based on the five listing factors established by the Act to determine if listing the population segment as either threatened or endangered is warranted.

Under current conditions, the Washington population of the western gray squirrel consists of three isolated, disjunct populations. The three populations resulted from western gray squirrels moving northward, from the region that is now the State of Oregon and later became separated from more southern populations by the Columbia River. The distribution of the western gray squirrel in Washington once extended from south Puget Sound, east along the Columbia River, and northward to Lake Chelan and subsequently expanded northward into Okanogan County in more recent times. We view these three populations as isolated portions of a once-continuous population, with a common evolutionary history.

#### Discreteness

A population segment of a vertebrate species may be considered discrete if it satisfies either one of the following two conditions: (1) it is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors (quantitative measures of genetic or morphological discontinuity may provide evidence of this separation); or (2) it is delimited by international governmental boundaries within which significant differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist.

On the basis of available information, we conclude that the Washington population segment of the western gray squirrel may be discrete in relation to the remainder of the subspecies' populations because it appears to be physically separated from other populations to the south in Oregon, California, and Nevada as a result of geographical isolation by the Columbia River. Additionally, each of the three Washington populations appear to potentially be discrete from each other and this is supported by preliminary genetic analysis (Warheit (2003)). The Columbia River has likely been a barrier