

(Committee for Idaho's High Desert et al. v. Badgley et al. (Civ. No. 01-1834-JO)).

The petitioner's request is to list mountain quail populations found throughout historically occupied portions east of the Cascade Crest in Washington and Oregon, historically occupied portions of western Idaho, and historically occupied portions east of the California/Nevada border south to the proximate vicinity of the Palmetto Mountains of southwestern Nevada.

Mountain quail are members of the family of New World quail, Odontophorinae, within the Order Galliformes (Gutierrez et al. 1983). They were first described as *Ortyx picta* by D. Douglas in 1829, but the type specimen was lost and the type locality is unknown (Gutierrez and Delehanty 1999).

Five subspecies of mountain quail recognized by the American Ornithological Union have been described using phenotypic appearances and geographical residency (Gutierrez and Delehanty 1999, Vogel and Reese 2002). The five subspecies by geographical areas are: *Oreortyx pictus pictus*, a resident in mountain regions of extreme western Nevada, the western side of the Cascade Range in southern Washington and south to the Sierra Nevada and inner Coast Ranges of California; *O. p. palmeri*, found in the western Coast Range from Washington south to San Luis Obispo County, California; *O. p. eremophilus*, a resident from the southern Sierra Nevada and central and southern Coast Ranges of California south through the Transverse Peninsular, Mexico; *O. p. russelli*, found in the Little San Bernardino Mountains, California; and *O. p. confinis*, a resident on northern Baja California, Mexico, primarily Sierra Juarez and Sierra San Pedro Mountains (Gutierrez and Delehanty 1999).

Although these five subspecies are recognized by the American Ornithological Union, these designations are considered ambiguous. No quantitative estimates of morphological variation have been published, and genetic validity of these subspecies distinctions has not been substantiated through any peer-reviewed published studies. Gutierrez and Delehanty (1999) stated that these designations are based on "poorly defined comparative and ill-marked plumage characters; therefore, both subspecies and subspecies range are considered dubious." Genetic analysis is needed to clearly establish whether there is subspecies designation across the geographic range of mountain quail (Vogel and Reese 2002).

The mountain quail is the largest North American quail north of Mexico (Gutierrez and Delehanty 1999). Males are slightly larger than females (264 to 308 millimeters (10.5 to 11.5 inches) in length and approximately 235 grams (7.6 ounces) in weight), but size is not a reliable indicator of sex. The sexes are monomorphic (similar in appearance). An adult's plumage consists of white side bars and a chestnut throat-patch with black, below a brilliant slate-blue head and neck. The mountain quail also has a long slender straight head plume composed of two feathers.

Mountain quail occur in shrub-dominated communities that vary across habitat types throughout the range of the species (Vogel and Reese 1995, Gutierrez and Delehanty 1999). These habitats include chaparral, mixed desert scrub of the Mojave Desert, and early successional-stage shrub vegetation following fire, logging, and other disturbances. In the drier eastern portions of its range, mountain quail are normally found in steeper slope areas along riparian corridors consisting of mountain and riparian shrub communities. Within all habitat types, mountain quail are notable for their seasonal migrations between breeding and wintering areas (Vogel and Reese 1995, Delehanty 1997). These migrations vary from significant altitudinal migrations of up to 80 kilometers (50 miles) among populations that summer at high elevation (i.e., Sierra Nevada, Cascade Range), to short altitudinal movements in low-elevation coastal areas to escape winter snows.

On the basis of several food habit studies summarized by Vogel and Reese (1995) and Gutierrez and Delehanty (1999), we know that mountain quail eat primarily plant material throughout the year. Invertebrate animal matter makes up approximately 0 to 5 percent of the diet, although young mountain quail up to 8 weeks of age eat up to 20 percent animal matter (ants, beetles, and other invertebrates). Plant material consumed includes perennial seeds, fruits, flowers, and leaves, annual forbs and legumes, and mushrooms. Gutierrez (1980) describes the mountain quail as a "sequential specialist" that concentrates on food resources as they become seasonally available and abundant. The species uses diverse food-capturing methods, including digging for subterranean bulbs of some plants (e.g., *Lithophragma* spp., *Brodiaea* spp.), and climbing shrubs and trees for fruits and seeds.

Similar to other quail species, mountain quail are able to breed at 1 year of age, although reproduction is

dependent upon the condition of breeding birds and is strongly influenced by winter/spring rainfall. Pair formation is thought to occur during late winter and early spring with nesting normally occurring from March to July, depending upon local climate, altitude, and latitude (Gutierrez and Delehanty 1999). Both male and female form incubation patches. Mountain quail are unique in that females often lay two clutches averaging 11 to 12 eggs, with male birds incubating the first clutch and females the second. This phenomenon is termed simultaneous multi-clutching (Delehanty 1997). The incubation period averages 24 days (range 23 to 25 days) and estimates of nest success from a limited number of studies averaged over 55 percent (Vogel and Reese 1995). Substantial evidence suggests that males incubate and then brood recently hatched young (Delehanty 1997, Pope 2002). Many mountain quail coveys are assumed to be family groups comprised of adults and juveniles that remain together until the next year's breeding season.

Mountain quail are presumed to be short-lived and subject to high levels of predation similar to other New World quail. On the basis of limited data, sex ratios are assumed to be nearly 1:1 for adults (Vogel and Reese 1995). Because mountain quail inhabit dense habitats and rugged terrain, populations can vary annually. Population surveys are difficult to conduct, and long-term population size and density studies are lacking. Data from the few studies conducted over the years have revealed mountain quail densities ranging from 9 to 54 birds/100 hectares (ha) (9 to 54 birds/247 acres (ac)) at four study sites in northern California, 21 birds/100 ha (21 birds/247 ac) in coastal California, and 30 birds/100 ha (30 birds/247 ac) and 28 birds/100 ha (28 birds/247 ac) on Klamath Mountains and Sierra Nevada sites, respectively (as summarized by Vogel and Reese 1995).

Accipiters, particularly Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), and the northern goshawk (*Accipiter gentilis*), are major predators of adult and young mountain quail (Gutierrez and Delehanty 1999, Vogel and Reese 2002). Other known predators include great horned owl (*Bubo virginianus*), coyote (*Canis latrans*), bobcat (*Lynx rufus*), gray fox (*Urocyon cinereoargenteus*), and rattlesnake (*Crotalus* spp.). Significant predation occurs on chicks during several days following hatching and when coveys are limited to habitats near water (Vogel and Reese 1995).

Rangewide, mountain quail are distributed in five western states,