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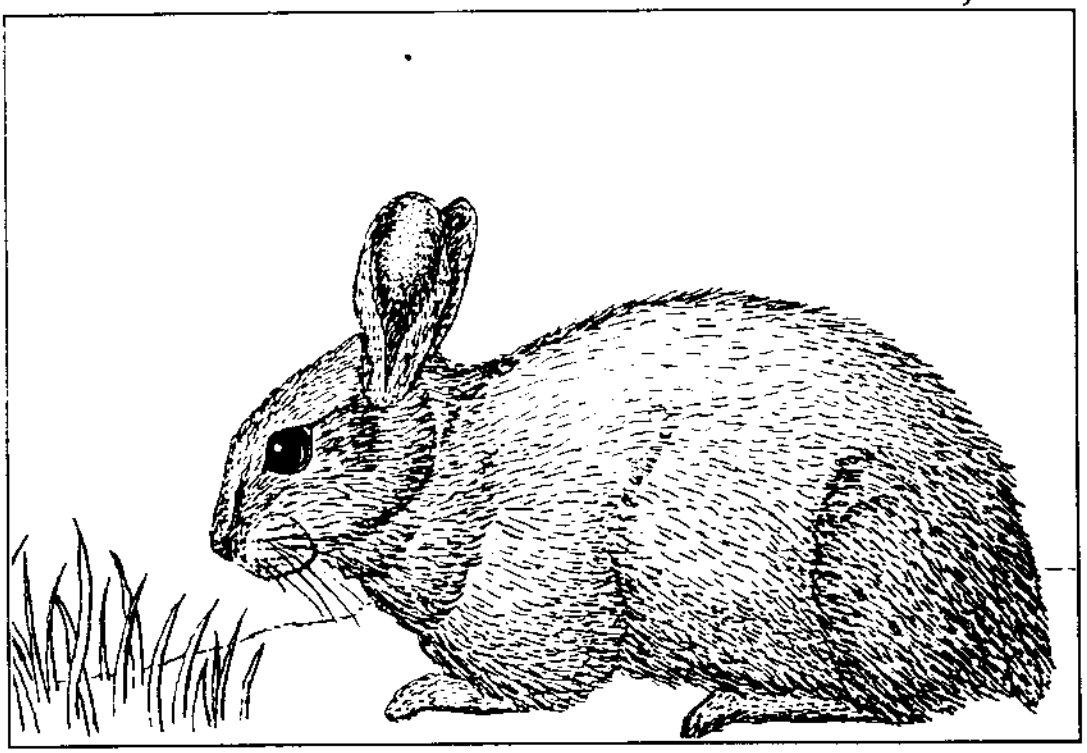
DEPARTMENT OF WILDLIFE

Washington

July 1993



STATUS OF THE PYGMY RABBIT *(Brachylagus idahoensis)* IN WASHINGTON

Washington
Department of Wildlife
Wildlife Management Division

The Washington Department of Wildlife maintains a list of endangered, threatened and sensitive species (Washington Administrative Codes 232-12-014 and 232-12-011, Appendix A). Species are evaluated for listing using a set of procedures developed by a group of citizens, interest groups, and state and federal agencies (Washington Administrative Code 232-12-297, Appendix A). The procedures were adopted by the Washington Wildlife Commission in 1990. They specify how species listing will be initiated, criteria for listing and delisting, public review, and recovery and management of listed species.

The first step in the process is to develop a preliminary species status report. The report includes a review of information relevant to the species' status in Washington including, but not limited to: historic, current, and future species population trends, natural history including ecological relationships, historic and current habitat trends, population demographics and their relationship to long term sustainability, and historic and current species management activities.

The procedures then provide for a 90-day public review opportunity for interested parties to submit new scientific data relevant to the status report and classification recommendation. During the 90-day review period, the Department holds one public meeting in each of its administrative regions. At the close of the review of the draft report, the Department completes a final status report and listing recommendation for presentation to the Washington Wildlife Commission. The final report, listing recommendation, and any State Environmental Policy Act findings are then released for public review 30 days prior to the Commission presentation.

This report is the Department of Wildlife's final Status Report and listing recommendation for the pygmy rabbit. The listing proposal will be presented to the Washington Wildlife Commission on August 14, 1993 at the Colville Community Center, Colville, Washington. Comments on the report and recommendation may be sent to: Endangered Species Program Manager, Washington Department of Wildlife, 600 Capitol Way N, Olympia, WA 98501-1091; or presented to the Wildlife Commission at its August 14 meeting.

This report should be cited as:

Washington Department of Wildlife. 1993. Status of the pygmy rabbit (*Brachylagus idahoensis*) in Washington. Unpubl. Rep. Wash. Dept. Wildl., Olympia.

Status of the

Pygmy Rabbit
(*Brachylagus idahoensis*)

in Washington

July 1993

Washington Department of Wildlife
600 Capitol Way N
Olympia, WA 98501-1091

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EXECUTIVE SUMMARY

The pygmy rabbit (*Brachylagus idahoensis*) is the smallest rabbit in North America. It is found throughout much of the sagebrush-dominated area of the Great Basin. This includes portions of Oregon, California, Nevada, Utah, Idaho, Montana, Wyoming, and Washington. Washington populations are disjunct from the core of the species' range, apparently separated for thousands of years. The pygmy rabbit is the only rabbit in North America that digs its own burrows. It is also uniquely dependent upon sagebrush, which comprises up to 99% of its diet. Dense sagebrush and relatively deep, loose soil are important characteristics of pygmy rabbit habitat.

Paleontological evidence shows that the species had a broader distribution in Washington thousands of years ago. However, within the past 75 years, pygmy rabbits have been lost from most of their historically documented range in Washington. Museum specimen records and reliable sight records show that pygmy rabbits formerly occupied sagebrush habitat in five Washington counties: Benton, Adams, Grant, Lincoln, and Douglas. Currently, pygmy rabbits are known to survive in five isolated fragments of suitable habitat, all in Douglas County.

In Washington, most former pygmy rabbit habitat has been altered such that it no longer can support populations. Crops are grown in most places where soils are sufficiently deep. In some areas where sagebrush remains, intensive grazing reduces the suitability of the habitat by breaking off sagebrush and opening up the shrub canopy. Range fires destroy habitat and extirpate local populations. Of the five populations known to remain in Washington, the largest may be comprised of fewer than 150 rabbits. The other four populations are significantly smaller.

The pygmy rabbit is listed as a threatened species by the Washington Wildlife Commission. It is listed as a Candidate Category 2 species by the U.S. Fish and Wildlife Service. The Washington Department of Wildlife, Soil Conservation Service, Washington Department of Natural Resources, and grazing permittees are involved in cooperative efforts to manage grazing and other activities to provide for pygmy rabbit habitat and populations at the primary Washington site. The Bonneville Power Administration is providing funding for conservation easements, management agreements, acquisition, or enhancement of pygmy rabbit habitat to mitigate for habitat losses from hydropower development.

Despite these efforts, pygmy rabbit numbers are too few and their distribution too limited to be considered secure. Any of a variety of catastrophic events such as fire, disease, flooding, or intense predation, could result in complete loss of the species from Washington.

It is recommended that the pygmy rabbit be reclassified from a threatened species to an endangered species in Washington.

TAXONOMY

The type specimen of the pygmy rabbit was taxonomically classified as *Lepus idahoensis* (Merriam) in 1891. In 1904 this species was reclassified as *Brachylagus idahoensis* (Lyon). In 1930 Grinnell placed this species in the genus *Sylvilagus*. However, Ingles (1973) stated that, on the basis of work conducted by Johnson in 1963 using serum proteins and hemoglobin as criteria, the pygmy rabbit should be separated from the genus *Sylvilagus*. Present information is once again causing a shift in the taxonomic classification of this species, with many zoologists now referring to the pygmy rabbit as *Brachylagus idahoensis* (Ingles 1973; M. Johnson, pers. comm.; Green and Flinders 1980a).

DESCRIPTION

The pygmy rabbit is the smallest rabbit species in North America. Reported mean weights for adults range from 398-462 g (0.88-1.02 lb) (Orr 1940, Janson 1946, Wilde 1978). Pygmy rabbits measure 23.5-29.5 cm (9.2-11.6 in) in length (Ingles 1973). The pygmy rabbit's pelage is primarily silky slate gray, tipped with brown; legs, chest and nape are a tawny cinnamon brown; ventral surface is whitish. The ears are distinctly short and rounded, thickly haired both inside and out and 3.5-5.2 cm (1.4-2 in) in length. The tail is small, 1.5-2.4 cm (0.6-0.9 in) (Orr 1940, Janson 1946). In general, the pygmy rabbit is distinguished from the cottontail rabbit by its distinctively smaller size, pale gray pelage, short rounded ears, small legs, and lack of a large white ventral surface on the tail. Also diagnostic is the pale buff along the entire edge of the ear (Dalquest 1948; Burt and Grossenheider 1964; Larrison 1970, 1976; Bradfield 1974).

GEOGRAPHICAL DISTRIBUTION

North America

The pygmy rabbit is found throughout much of the sagebrush area of the Great Basin as well as some of the adjacent intermountain areas (Fig. 1) (Green and Flinders 1980a, Verts and Carroway 1984). The eastern boundary extends to southwestern Montana, and western Wyoming (Campbell et al. 1982). The southeastern boundary extends to southwestern Utah (Janson 1946, Pritchett et al. 1987), and includes the only occurrence of the species outside the limits of the Pleistocene Lake Bonneville (Columbia River) drainage. Central Nevada (Nelson 1909) and northeastern California (Orr 1940) form the southern and western limits. The northern boundary of the species' core range historically reached to the southern foothills of the Blue Mountain Plateau in eastern Oregon (Bailey 1936). However, Washington populations are farther north, extending into Douglas County. Within its range, the pygmy rabbit's distribution is far from continuous. It is patchily distributed, being found only in areas where sagebrush is tall and dense, and the soil is relatively deep.

Washington

The pygmy rabbit's Washington range is disjunct from the core range of the species, and likely has been for some time (Lyman 1991, Grayson 1987). The pygmy rabbit's current range is considerably smaller than during its post-glacial population high, which occurred more than 7,000 years ago (Butler 1972). In the Northwest, the pygmy rabbit's range has shrunk southward toward the central part of eastern Oregon (Weiss and Verts 1984). Lyman (1991) reports a broader prehistoric range in Washington as well. Habitat changes, which reflect climate change over thousands of years, likely account for the pygmy rabbit's rangewide decline, and the disjunction of the Washington populations.

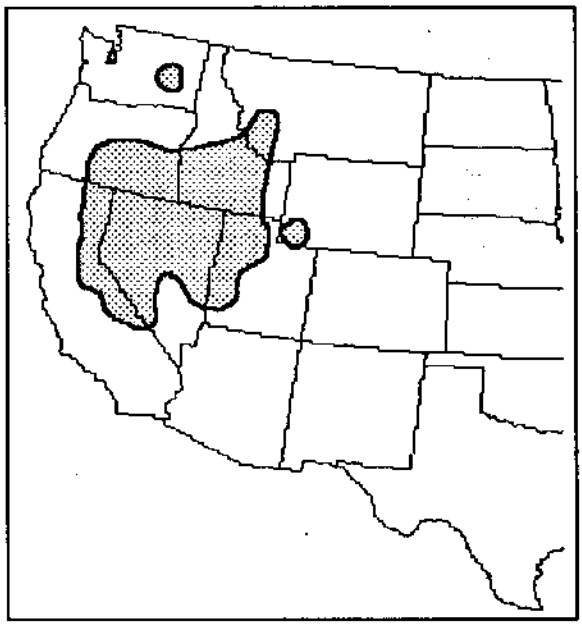

Figure 1. Current range of the pygmy rabbit.

Table 1 lists reliable historic pygmy rabbit locations in Washington. In most cases voucher specimens are available in museums. W. Clanton's collections, made during a study of campestral plague in rodents, form the basis for much of our understanding of the pygmy rabbit's past distribution in Washington. One of Clanton's collection localities, Sagebrush Flat, was also a collection site of G. Hudson and M. Johnson. The museum records associated with these collections describe the location differently, resulting in the impression that several localities were involved. F. Dobler's conversations with M. Johnson, his examination of Hudson's field notes, and his discovery of Clanton's field maps have resulted in a clear understanding that all specimens were collected at Sagebrush Flat.

Written information contributes to confusion about the pygmy rabbit's former distribution as well. Couch (1923) described J. Finley's collection of pygmy rabbits as "near Ritzville" in Adams County. Hall (1981) referenced a record at Lind, also in Adams County. Rather than two separate locales, both of these published sources are referring to J. Finley's collection of two pygmy rabbits which are part of the U.S. National Museum collection in Washington D.C. (Table 1).

Booth (1947) mentions a pygmy rabbit from Crab Creek in Grant County. Recent examination of the specimen verifies that it is a Nuttall's cottontail (*Sylvilagus nuttallii*). Williams (1975) reports discovery of pygmy rabbit remains in great horned owl (*Bubo virginianus*) pellets and as sub-fossils in dune blowout areas of the Juniper Forest in Franklin County. Williams also reports an abundance of tracks that he attributed to pygmy rabbits. However, while Williams' work was an attempt at characterizing the complete bird and mammal fauna of the Juniper Forest, it did not recognize the presence of Nuttall's

cottontails. Miller (1977) documents paleontological evidence of pygmy rabbit occurrence in the Juniper Forest, where pygmy rabbits apparently survived at some point during the past 3,000 years. He trapped small mammals in the Juniper Forest but did not catch pygmy rabbits. He caught Nuttall's cottontails and considered them locally common. Department of Wildlife biologists who assessed the area concluded that the Juniper Forest does not currently provide habitat suitable for pygmy rabbits (F. Dobler, pers. comm.). Climatically-driven habitat changes (e.g., dimunition of the range of sagebrush) discussed by Lyman probably account for the lack of a pygmy rabbit population in the Juniper Forest today.

Recent Washington Department of Wildlife field inventories verify pygmy rabbits at five sites within Douglas County, including a sizeable population at the Sagebrush Flat site where Clanton, Hudson, and Johnson collected. The range of extant populations in Washington is provided in Figure 2.

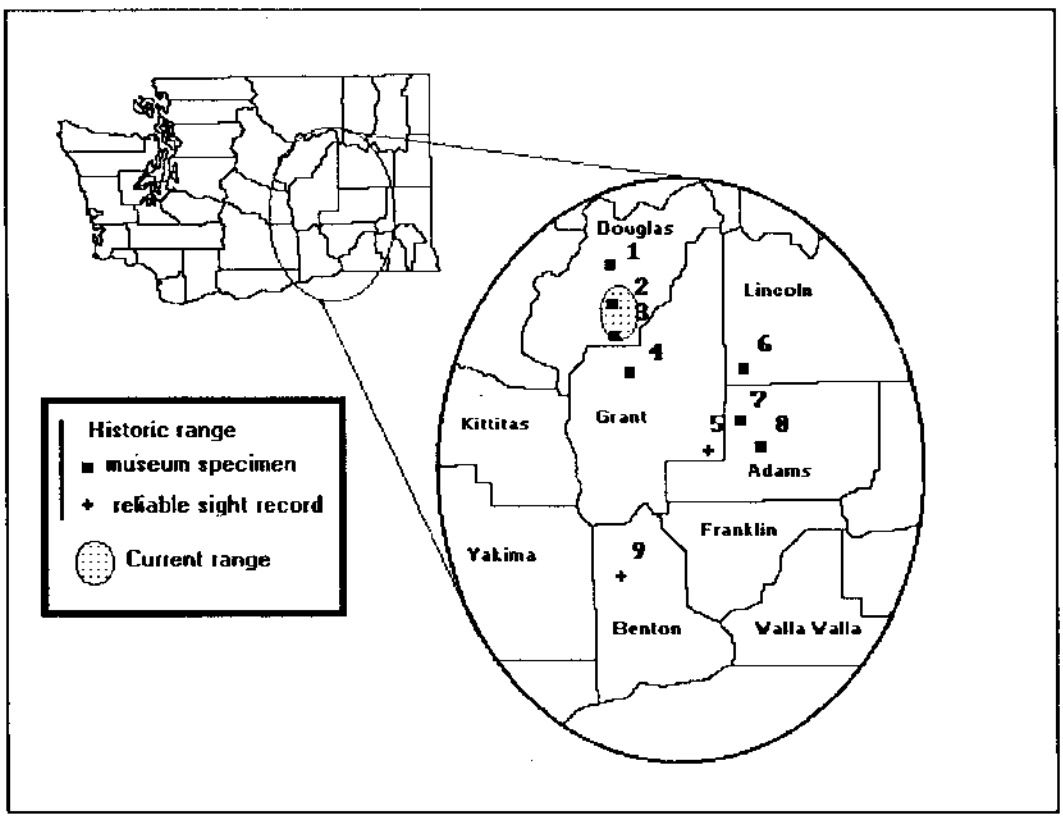

Figure 2. Distribution of the pygmy rabbit in Washington. Numbers refer to entries in Table 1.

Table 1. Historic pygmy rabbit localities in Washington based on museum specimens and reliable reports. Map reference refers to Figure 2.

Location	County	Map #	Date(s)	Source[a]
Schrag	Adams	7	1956	WSU 56-45 (Drake)
Lind		8	1923	USNM (Finley), Couch (1923)
Rattlesnake slope Hanford Reservation	Benton	9	1979	R. Fitzner (pers. comm.)
10 km E of Mansfield	Douglas	1	1950	PSM 2300 (Clanton)
Sulphur Canyon		2	1979	PSM 25856 (Lloyd)
Sagebrush Flat		3	1949	PSM 1992-7 (Clanton)
Sagebrush Flat		3	1949	WSU 49-357-361, 49-375 (Hudson)
Sagebrush Flat		3	1952	WSU 52-40, UBC 3058 (Hudson)
Sagebrush Flat		3	1962	PSM 8955-6 (Johnson)
Sagebrush Flat		3	1988	F. Dobler (pers. comm.)
Burton Draw		shaded	1987	R. Friesz (pers. comm.)
Coyote Canyon		shaded	1988	R. Friesz (pers. comm.)
Whitehall		shaded	1988	C. Garber (pers. comm.)
Clay site		shaded	1988	R. Friesz (pers. comm.)
4.8 km NW of Ephrata	Grant	4	1949	PSM 2229 (Clanton)
Warden		5	1921, 23	Couch (1923)
13 km W of Odessa	Lincoln	6	1949	PSM 2230 (Clanton)

[a]Museum abbreviations as follows: James R. Slater Museum of Natural History, University of Puget Sound, Tacoma, Washington (PSM); Conner Museum, Washington State University, Pullman, Washington (WSU); University of British Columbia, Vancouver, B.C. (UBC); U.S. National Museum, Washington D.C. (USNM). Specimen numbers are followed by collector's name in parentheses.

NATURAL HISTORY

Behavioral Characteristics

The species is reported to be crepuscular, active at dawn or dusk (Davis 1939, Janson 1946), but may be found above ground any time of day. A study in Idaho reports the peak of activity to be during mid-morning (Bradfield 1974). Pygmy rabbits have a rather deliberate gait, staying low to the ground. To avoid predators they may depend more on their ability to maneuver through dense sagebrush than on speed (Merriam 1891, Davis 1939, Severaid 1950).

Burrowing

The pygmy rabbit is a burrowing species utilizing extensive, heavily-used runways (Severaid 1950). Unlike other species of rabbits in North America, this species usually digs its own burrows (Borell and Ellis 1934, Walker et al. 1964). Burrow systems usually consist of two to seven openings, with the main entrance concealed at the base of a sagebrush plant (Olterman 1972, Green 1979). Gahr (1993) found that Washington burrows contained an average of 2.7 entrances (range 1-10) and entrance diameter averaged 19 cm (8 in) with a range of 10-35 cm (4-14 in) (n=82). A small trench or terrace was present outside burrow entrances and no chambers or enlarged areas were found along the tunnels. Janson (1946) reports that in Utah four or five entrances are typical, but 10 are sometimes observed. In Idaho, two entrances are most often found (Wilde 1978). Entrances are 10-12 cm (4-5 in) in diameter and usually found at the base of large sagebrush shrubs on a gentle slope. Tunnels usually extend to no more than 1 m (3 ft) in depth (Green and Flinders 1980a, Kehne 1991, Gahr 1993).

Home Range

Pygmy rabbits are generally found within a 30 m (98 ft) radius of their burrows during winter with an expanded home range in spring and summer (Janson 1946). During the winter months snow burrows play an important part in foraging; burrows are constructed to lead from one sagebrush plant to another (Bradfield 1974).

Home ranges for pygmy rabbits in Washington are larger than reported in other studies (Gahr 1993). Home range and movement data were obtained from 16 pygmy rabbits (seven adult males, seven adult females, and two juvenile females) that were relocated during daylight hours at least 20 times during the breeding season (January-June). The average male home range size of 24.9 ha (61.5 ac) was significantly larger than that of females, which was 0.8 ha (1.98 ac). Male home range size (95% harmonic mean estimation method) was significantly larger in grazed areas, where it averaged 28.9 ha (71.4 ac), than ungrazed areas, where it averaged 13.7 ha (33.8 ac).

Males made significantly longer movements, averaging 155 m (513 ft), than females, which moved an average of 33 m (110 ft), in the breeding season. Gahr (1993) explained that females generally remain in one small area, while males move to areas of different breeding females. In the non-breeding season, males still had longer movements than females. However, this difference was not significant, probably due to low sample sizes ($n \leq 5$). Maximum distances between locations was greatest for adult males and ranged up to 1200 m (3960 ft).

Average distances moved by pygmy rabbits in Washington were greater than previous estimates in Idaho studies (Wilde 1978). There were no significant differences in

comparisons of grazed and ungrazed areas for distances moved between relocations for males or females in the breeding (January-June) or non-breeding season (July-September).

Food

Sagebrush is the major food of the pygmy rabbit, comprising up to 99% of its winter diet, but pygmy rabbits will eat other vegetation (Bradfield 1974, Gahr 1993). Green rabbitbrush (*Chrysothamnus viscidiflorus*) is an important shrub. The pygmy rabbit diet includes several species of grass: bluebunch wheatgrass (*Agropyron spicatum*), crested wheatgrass (*A. desertorum*), Indian ricegrass (*Oryzopis hymenoides*), needle and thread grass (*Stipa comata*), Thurber's needle grass (*S. thurberiana*), Sandberg blue grass (*Poa secunda*), and cheat grass (*Bromus tectorum*). Forbs include fiddle-neck tarweed (*Amsinckia* sp.), bastard toad-flax (*Comandra umbellata*), yarrow (*Achillea millefolium*), paintbrush (*Orthocarpus* sp.), mustard (*Brassica* sp.), and squirrel tail (*Sitanion hystrix*). During the spring and summer months the diet consists of 39% grasses and 10% forbs with the majority of the diet still consisting of sagebrush. This relationship with sagebrush is unique among rabbits (Green 1979).

HABITAT REQUIREMENTS

Vegetative Characteristics

The pygmy rabbit is dependent upon sagebrush, primarily big sagebrush (*Artemisia tridentata*), and is usually found in areas where big sagebrush grows in very dense stands. Tall, dense sagebrush clumps are essential (Orr 1940).

At Sagebrush Flat, Washington, big sagebrush is the dominant shrub species (Gahr 1993). In Idaho, bitterbrush (*Purshia tridentata*) and big sagebrush are present in equal amounts (19% coverage of each) (Green and Flinders (1980b). In Oregon, sagebrush species account for 23.7% of the cover at pygmy rabbit sites (Weiss and Verts 1984).

Several studies have compared shrub cover density and height between burrow locations and randomly selected locations (Table 2). While the values reported by these studies are not the same, partly a product of different techniques of measurement, all indicate that sagebrush cover is a major habitat feature selected by pygmy rabbits.

The density of big sagebrush in pygmy rabbit areas exceeds that which is found throughout most of the plant's distribution. In Washington the areas chosen by rabbits are those which have been disturbed in the past by either grazing or cultivation. Most typically, heavy grazing increases the density of big sagebrush (Ellison 1960). After grazing ceases, and the grass cover recovers, the habitat becomes optimal for pygmy rabbits. One pygmy rabbit site in Washington (Burton Draw) has a history of cultivation. When cultivation ended years ago, big sagebrush invaded the fields and provided a dense cover of regrowth.

In some natural, non-disturbed situations, sagebrush density may exceed 20% but these sites are rare, and limited to areas with greater soil moisture. The pygmy rabbit may be somewhat self-sustaining, increasing the density of sagebrush in the areas they use for feeding (Janson 1946, Wilde 1978). The area around active pygmy rabbit burrows is heavily grazed by the rabbits (Pearson 1965). At Sagebrush Flat, percent cover of bunchgrasses is less at burrow sites (3.2%) than at random sites around burrows (8.9%) (Gahr 1993).

Table 2. Comparisons of shrub cover and density between pygmy rabbit burrow sites and non-burrow sites.

Location	Mean shrub cover (%)	Mean shrub height (cm)	Reference
Sagebrush Flat burrow sites	32.7	82	Gahr (1993)
Sagebrush Flat random sites	17	53.4	
Idaho burrow sites	46	56	Green and Flinders (1980b)
Idaho random sites	unknown	25	
Oregon burrow sites	28.8	84	Weiss and Verts (1984)
Oregon random sites	17.7	53	

Burrows

Habitat suitable for pygmy rabbits must allow the animals to burrow. Burrows provide protection during periods of severe weather conditions, safety from predators, and may be used for raising young (Bradfield 1974). Burrows are usually under big sagebrush and only rarely located in an opening in the vegetation (Green 1978, Wilde 1978). However, pygmy rabbits have been observed using abandoned badger (*Taxidea taxus*) and yellow-bellied marmot (*Marmota flaviventris*) burrows, as well as natural cavities, holes in volcanic rock, rockpiles, and around abandoned buildings (Green 1979, 1980; F. Dobler, pers. comm.). Usually these are in association with a population using typical burrows in deep soil amidst sagebrush, and probably do not represent a habitat alternative capable of totally replacing dense sagebrush and deep soils.

Soil Characteristics

Since pygmy rabbits excavate their own burrows, soil structure is a key habitat feature. Generally, soft, deep soils are required for burrowing. Alluvial fans may provide the soil requirement in some cases (Orr 1940, Green and Flinders 1980b). Oregon burrow sites are located where soils are significantly deeper and looser than adjacent sites (Weiss and Verts

1984). Pygmy rabbits will select sites where wind-borne soil deposits are deeper (Wilde 1978).

Kehne (1991) documented soil and other characteristics at 80 active burrow sites at Sagebrush Flat. Carbonates were found at an average of 72 cm (28 in) deep, not as deep as would be expected in this precipitation zone. Carbonates in a soil make it less compact, looser and, generally, easier to dig. In addition, burrows at Sagebrush Flat tend to be in deep soils; 96% are in soils at least 51 cm (20 in) deep (a limiting layer of basalt, duripan, weak pan, or gravel often underlays the soil). A family control characterization of soil types indicates that burrows are found in coarse-silty (46%), fine-loamy (28%), ashy (17%), and coarse-loamy (9%) soils. Of 80 active burrows, 77% are on mound/intermound or dissected topography. The soils at Sagebrush Flat are derived from loess, or wind-borne parent materials. Other pygmy rabbit rabbit sites in Douglas County exhibit similar conditions with glacial parent materials. The most common similarity between these pygmy rabbit sites is the mound/intermound with dissected hillslopes adjacent to narrowly dissected alluvial areas.

Topography

Landform, as well as soil characteristics, plays a part in burrow site selection. The rabbits use the contours of the soil, most often digging into a slope (Wilde 1978; Kehne 1991; F. Dobler, pers. comm.). Although they do use level sites, even here they often utilize a small rise or change in contour for the burrow entrance. Gahr (1993) found that topography influenced the distribution and abundance of burrow sites at Sagebrush Flat. The study area was divided along 12 and 18 m contour intervals with drainage bottoms defining the base elevation. More burrows were found along four main drainage systems running northeast to southwest. There was almost a four-fold increase in burrow site density in the 0-12 m (3.3-39 ft) interval compared to the 18 m (59 ft) or more interval.

Cattle Grazing

The role and influence of grazing on pygmy rabbit habitat is not well understood. There have been no studies specifically designed to determine the influences of grazing or grazing management strategies on pygmy rabbit habitat or population conditions. It appears that grazing can benefit or harm habitat characteristics depending on a variety of factors including timing and intensity of grazing, stocking densities, and locations of water or salt, or other factors that would concentrate cattle use. In some cases grazing can increase density of sagebrush (Ellison 1960) and in other situations intensive grazing can break down sagebrush cover and thus make it unsuitable for pygmy rabbits. At lower intensities, it may reduce fuel loading and thus fire danger. Gahr (1993) compared pygmy rabbit use of grazed (3 months of cattle presence in fall) and ungrazed areas. She found no differences in densities of burrow systems and burrow sites between the grazed and ungrazed areas. Both burrow systems and burrow sites were distributed proportionally to the area available in each type.

Foraging

Sagebrush is a year-round component of the pygmy rabbit diet. A variety of grasses and forbs are required as well. In radio telemetry studies of pygmy rabbits at Sagebrush Flat, Gahr (1993) observed rabbits feeding 82 times and identified the food item in 53 cases. There was no difference in diet between the grazed and ungrazed areas (grazed area: shrubs 32%, grasses 45%, forbs 23%; ungrazed area: shrubs 39%, grasses 45%, forbs 16%). The rabbits ate forbs from April through June and predominantly grasses from April through August.

Breeding

Pygmy rabbits spend the majority of their time close to their burrows. Early reproductive activities of adults may be concentrated at burrows (Wilde 1978).

Seasonal

Pygmy rabbit diet changes somewhat with season. This variability is explained by changes in food plant availability close to the burrow. Pygmy rabbits are not known to move seasonally to exploit new or different habitats. During winter, pygmy rabbits excavate extensive snow burrows which are heavily utilized for foraging (Bradfield 1974).

POPULATION DYNAMICS

Reproduction

Sexual development in males begins in January, peaks in March and declines in June (Janson 1946, Wilde 1978). Females are fertile from late February through March in Utah (Janson 1946) and from late March through late May in Idaho (Wilde et al. 1976). In Washington, reproductively active males are found from January through June, lactating females are present from March through September, and pregnant females are found from February through August (Gahr 1993). Gestation lasts from 26 to 28 days (Bradfield 1975). Pygmy rabbits appear to be able to breed during their second breeding season of life. Juveniles do not breed (Wilde 1978).

Litter size ranges from five to eight and averages six (Davis 1939, Wilde et al. 1976, Wilde 1978). Females produce up to three litters per year (Green 1978, Wilde 1978).

Bradfield (1974) reports that young are born in the burrows. However, nests are unknown. Excavated burrows do not reveal chambers or nesting material and burrows excavated where lactating females are taken also reveal no young (Janson 1946, Bradfield 1975, Gahr 1993). As a result, some researchers theorize that the young are not raised in burrows but are

individually hidden at the bases of separate and scattered shrubs (F. Dobler, pers. comm.). Kritzman (1977) reports pygmy rabbit young are born in an altricial state, requiring extensive parental care.

Mortality

The population dynamics of the pygmy rabbit are not well understood. The best information on the population structure is provided by Wilde (1978). Females tend to be older than males, though the oldest age class in Wilde's study is 3 years old. Mean annual adult mortality is as high as 88%. The period of greatest mortality begins in January and extends through March. The survival of juveniles is initially very low, with more than 50% disappearing within 5 weeks of emergence. Complete loss of a cohort is possible as Wilde reports during a year of his study. Starvation and environmental stress probably account for some loss. The chief cause of mortality is predation (Green 1979).

Predators of pygmy rabbits include weasels (*Mustela frenata*), coyote (*Canis latrans*), and badger, which may enter or dig up pygmy rabbit burrows (Wilde 1978). Other predators, which will take pygmy rabbits encountered above ground, include bobcats (*Felis rufus*), great horned owls (*Bubo virginianus*), long-eared owls (*Asio otus*) and northern harriers (*Circus cyaneus*) (Gashwiler et al. 1960, Borell and Ellis 1934, Hall 1946, Janson 1946, Ingles 1965, Green 1978, Wilde 1978). In Washington, burrows frequently show signs of being dug out by badgers or coyotes (Dobler and Dixon 1990). Short-eared owls (*Asio flammeus*) and northern harriers frequently hunt over pygmy rabbit colonies (R. Friesz and F. Dobler, pers. comm.). Gahr (1993) concluded that at least two cases of pygmy rabbit mortality at Sagebrush Flat were due to predation by raptors. Potential predators seen in the area included great-horned owls, northern harriers, prairie falcons (*Falco mexicanus*), and golden eagles (*Aquila chrysaetos*).

Pygmy rabbits are protected by law and cannot be legally killed. However, discussions with hunters in the Columbia Basin indicate most hunters do not distinguish pygmy from cottontail rabbits. This suggests that pygmy rabbits may be accidentally taken by hunters.

Davis (1939) states that pygmy rabbits are infested with endoparasites as well as ectoparasites. Ticks, fleas, and lice may be found on every animal examined (Davis 1939). Fleas are abundant on some specimens. Fleas can be so numerous that the rabbit's ears appear tattered (Lloyd 1979). Gahr (1993) observed fleas on pygmy rabbits at Sagebrush Flat year-round, with the greatest infestations occurring from February to May. Ticks were seen on rabbits from March to September with the highest infestation in the spring. Bot fly larvae were found on two pygmy rabbits in grazed portions of Sagebrush Flat. They were seen in September, with up to four fly larvae on one rabbit. Bot fly larvae were also found on three cottontail rabbits in the grazed area. Although Gahr cautioned that the sample size was too small to draw conclusions, she suggested that cows may act as a vector for spreading the parasites or that the bot flies might be attracted to the grazed area by cow manure. It is

not known what the effect of parasitism by bot flies is on pygmy rabbits. The influence of parasites on mortality rates in general is unknown.

Disease is probably not a significant mortality factor (Green 1979).

POPULATION STATUS

Past

Paleontological investigations demonstrate shrinkage of the pygmy rabbit's Pacific Northwest range over the past 7,000 years. This shrinkage corresponds with climatic conditions affecting sagebrush plant communities (Butler 1972, Lyman 1991).

Within the past 75 years, the pygmy rabbit's decline appears to have rapidly accelerated. Verified localities (Fig. 2) indicate a past distribution over five counties. Virtually nothing is known about the abundance of the pygmy rabbit at any of these localities or the extent of area they occupied.

Published information does little to clarify the situation. Taylor and Shaw (1929) reported the pygmy rabbit as fairly common in the coulees and slopes of Adams County. Booth (1947) reported them very scarce, occurring only in small, limited areas in the arid parts of Adams and Grant counties. Dalquest (1948) considered the species rare and of local occurrence, restricted to the central portion of the Columbia Plateau. Buechner (1953), in reviewing the dramatic agricultural changes occurring in eastern Washington, predicted that the pygmy rabbit would disappear entirely in Washington. Maughn and Poelker (1976) indicated that due to its specialized habitat requirements, the pygmy rabbit was suffering a decline in numbers from habitat destruction.

There were no verified pygmy rabbit collections or reports between 1962 and 1979. In 1979, Washington Department of Wildlife biologists found pygmy rabbits at Sulphur Canyon in Douglas County (Lloyd 1979). Surveys of this area during 1985 found no signs of an extant colony (Poole 1985). It is likely that the Sagebrush Flat population identified in 1949-62 was still existing at this time, but the specific location for the historic records was not known when the surveys were conducted. Because the 1985 searches failed to find pygmy rabbits anywhere in Washington, there was speculation that the species may have been extirpated. In December 1987, Department biologists discovered a colony of pygmy rabbits at Burton Draw in Douglas County (Table 1). Intensive surveys conducted in 1988 found colonies at four additional sites (Sagebrush Flat, Coyote Canyon, Whitehall, and Clay Site).

Present

Five pygmy rabbit populations are known to exist in pockets of suitable habitat in Douglas County (Table 3, Figure 2). It is possible that the existing pygmy rabbit populations are isolated from one another since there is little to no sagebrush landscape connecting them. Gahr (1993) suggested that although maximum movement distances found at Sagebrush Flat may not represent the absolute maximum possible of pygmy rabbits, movement of rabbits between the occupied sites was unlikely.

Three of the populations are extremely small (estimated at fewer than 30 active burrows), and one is estimated to comprise from 70 to 80 active burrows. The Sagebrush Flat population is the largest known population in Washington, with an estimated 588 active burrows (Table 3). Since pygmy rabbits use multiple burrows and share some burrows it is not possible to equate numbers of burrows to numbers of rabbits. The population at Sagebrush Flat is estimated to be fewer than 150 rabbits (Gahr 1993).

Gahr (1993) used two techniques to estimate rabbit numbers at Sagebrush Flat. Using data on shared and unshared burrows, she estimated the Sagebrush Flat population to be 78 pygmy rabbits, with a possible range of 55 to 142. Using a second, independent technique based on radio telemetry data, she estimated the population to be 107 pygmy rabbits.

Future

Because pygmy rabbits are currently represented in Washington by relatively small, isolated populations, their future is in doubt. Such small populations are vulnerable to habitat changes and random events that can cause local extirpation. While there are few places where pygmy rabbit habitats are being created, there are many places where habitat is being degraded or eliminated. It is these factors that suggest the pygmy rabbit is vulnerable to extirpation in Washington.

Existing pygmy rabbit populations are likely vulnerable even without human-initiated habitat alterations. Small, isolated populations are vulnerable to extirpation as the result of fire, periods of drought, floods, intense predation, disease, and, when numbers get low enough, random variation in birth and death rates or sex ratios (Dobler and Dixon 1990). Historically, such local losses are likely part of a dynamic process of periodic local extirpation and eventual recolonization. In such a dynamic process, species' ranges fluctuate over time as climatic and other conditions provide more favorable or less favorable conditions for the species.

Today, the pygmy rabbit's ability to rebound from unfavorable periods may be reduced. Suitable habitats are often separated by inhospitable landscapes and rabbits available to disperse to vacant habitat are few. As a result of these conditions, pygmy rabbits are increasingly vulnerable to extirpation. It is likely that recovery of the species will require restoration of additional widely distributed habitats and reintroduction of rabbits to increase numbers and distribution to levels which will buffer against catastrophic events.

HABITAT STATUS

Past

Big sagebrush-dominated plant communities once covered much of the landscape within the pygmy rabbit's former range. Prior to European settlement, there was an estimated 4.2 million ha (10.4 million ac) of shrub steppe landscape in eastern Washington (Dobler 1992). Based on current knowledge of pygmy rabbit habitat requirements, it is likely that pygmy rabbits lived in areas where sagebrush cover was dense, soils were relatively deep and loose enough to allow digging, and where there was mound-intermound and dissected topography. Pre-settlement big sagebrush cover is estimated at about 10% (Blaisdell 1953), much lower than what is selected by the pygmy rabbit (28-46%). This suggests that the pygmy rabbit opportunistically inhabited disturbed sites in the sagebrush landscape, which had an increased density of sagebrush. In pre-settlement times this could have been created by herds of ungulates, such as bison (*Bison bison*). Pygmy rabbits were probably patchily distributed over a vast area as a result of the scattered distribution of sites with appropriate habitat characteristics. Many areas of sagebrush-dominated landscape without these characteristics probably provided little more than food and cover for animals dispersing out from population centers.

Buechner (1953) discussed some of the historic habitat changes that have affected the biota of Washington. Most areas with deep soils were converted to croplands long ago. Roads and towns also displaced habitat or served to interrupt travel routes. Much of the remaining sagebrush area was used for grazing cattle. Past grazing practices sometimes over-grazed areas to the point that shrub cover was broken down and rendered less suitable for pygmy rabbits.

Present

Approximately 40% of the the original shrub-steppe now remains in Washington (Dobler 1992). A systematic inventory of sagebrush-dominated landscapes with the deep, loose soils characteristic of pygmy rabbit habitat has not been completed. However, general knowledge of land uses in the pygmy rabbit's range indicates that the appropriate habitat is currently just a small fraction of its former abundance. Much of the landscape within the pygmy rabbit's former range in Washington is now used to grow crops.

Three of the five known sites (Sagebrush Flat, Whitehall, and Clay Site) are on state land managed by the Department of Natural Resources and leased for grazing; two (Coyote Canyon and Burton Draw) are on private land. Approximately 75% of the largest site, Sagebrush Flat, is leased for grazing that takes place for about 3 months in the fall. The Department of Natural Resources is currently participating in a cooperative effort (involving the grazing permittee, Soil Conservation Service and Washington Department of Wildlife) to develop management guidelines for this site.

Table 3. Currently occupied pygmy rabbit sites in Washington.

Site Name	Landowner	Size (ha)	Est. # of burrows
Sagebrush Flat	Wash. Dept. Wildl./Dept. Nat. Resour.	96/1272	588
Coyote Canyon	Private	184	70-80
Burton Draw	Private	128	25
Whitehall	Wash. Dept. Nat. Resour.	16	25-30
Clay Site	Wash. Dept. Nat. Resour.	<16	7-10

Future

The future of pygmy rabbit habitat in Washington is difficult to predict. There is likely to be a decline or degradation in the amount of suitable pygmy rabbit habitat existing today as a result of agricultural conversion, sagebrush removal, possible bentonite mining at one site, and the unpredictable potential for wildfire losses. Each year, range fires eliminate sagebrush from many areas in eastern Washington. However, there is the potential for increasing pygmy rabbit habitat. If lands currently used for agriculture or grazing were allowed to naturally return to conditions suitable for pygmy rabbits.

CONSERVATION STATUS

Legal Status

The pygmy rabbit in Washington is classified as Protected Wildlife and a Threatened species under Washington Administrative Code 232-12-011. This classification makes it illegal to kill, injure, capture, or harass pygmy rabbits.

The U.S. Fish and Wildlife Service retains the pygmy rabbit in its Category 2 list of species that may warrant listing under the Endangered Species Act. Therefore, the Service recommends protection of the species and its habitat. However, binding legal protection is not provided by listing as a Candidate Category 2 species.

Management Activities

The Washington Department of Wildlife has conducted surveys, research, and management activities intended to benefit pygmy rabbits since 1979. The Department conducted a 6-year study of the shrub-steppe ecosystem, including studies of pygmy rabbits. Studies included searches for pygmy rabbit populations, mapping of burrows, radio telemetry, and evaluations of the capability of Landsat technology to identify pygmy rabbit habitat. In 1991 the Department contributed funds to the University of Washington to support a graduate study of pygmy rabbits (Gahr 1993). The study determined burrow habitat and use, population densities, home range sizes, and food habits of pygmy rabbits, and compared parameters on grazed and ungrazed rabbit habitat.

The Department of Wildlife, Soil Conservation Service, Department of Natural Resources, and grazing permitee are in the process of developing a Coordinated Resource Management Plan for the primary pygmy rabbit site in the state. The plan is expected to be implemented in 1993. Grazing on the Burton Draw site was transferred to Department of Wildlife property to reduce potential for harm to pygmy rabbits. The Department also acquired grazing sub-leases for about 272 ha (680 ac) at the Sagebrush Flat site, which have remained ungrazed. An adjacent 96 ha (240 ac) parcel was purchased for eventual inclusion in a pygmy rabbit habitat area. This parcel currently includes a leased 36 ha (90 ac) portion that is cultivated in wheat. The Department of Natural Resources has been supportive of efforts to maintain habitat conditions suitable for pygmy rabbits and has denied proposals for sagebrush removal in areas where pygmy rabbits occur.

The Bonneville Power Administration is providing funding to the state to protect, mitigate, and enhance fish and wildlife affected by the development and operation of hydroelectric facilities on the Columbia River and its tributaries. Some of this funding may be used for conservation agreements, management agreements, acquisition, or enhancement of pygmy rabbit habitat (Ashley 1992, U.S. Dept. Energy 1992a,b).

FACTORS AFFECTING CONTINUED EXISTENCE

Adequacy of Existing Regulatory Mechanisms

There are no existing regulatory mechanisms to ensure that land uses in pygmy rabbit habitat will consider the needs of pygmy rabbits. The pygmy rabbit is a Priority Species under the Priority Habitats and Species Program of the Washington Department of Wildlife. As part of implementation of Washington's Growth Managagement Act, local governments may be considering important habitat areas in their regulatory framework. Implementation is variable among counties and it is not known whether this program will provide benefits for pygmy rabbit habitat conservation.

The Wildlife Code of Washington classifies the pygmy rabbit as Protected Wildlife and, as such, it cannot be legally hunted. It is, however, subject to being accidentally killed as a result of mistaken identity.

Present and Threatened Habitat Loss

Most former pygmy rabbit habitat in Washington has been altered such that it no longer can support populations. Future additional losses may occur through conversion to agriculture, sagebrush removal for cattle grazing, or wildfire. It is expected that there will be consideration of pygmy rabbit habitat needs in decisions about land uses on the three sites in public ownership (Department of Natural Resources, Department of Wildlife). However, one of these sites may be vulnerable to potential mining impacts. There has been interest in a mineral lease for the purpose of mining bentonite at one of the sites. It is unclear, at this time, the extent to which this action may eventually impact pygmy rabbit habitat.

On the sites in private ownership some opportunities may exist to develop cooperative management agreements to help provide pygmy rabbit habitat conditions. In other instances, or where rabbits may occur but have not yet been discovered, habitat losses or degradation may occur.

Grazing is the primary economic use for the lands that currently support pygmy rabbits, and in many cases has been the predominant land use for many years. Depending on a wide variety of factors, grazing has the potential to both harm and benefit pygmy rabbit habitat. In some cases, habitat management for pygmy rabbits may include managed grazing. Implemention of sound habitat management prescriptions in the future will be enhanced as knowledge of pygmy rabbit habitat needs and grazing relationships is gained.

Other Natural and Manmade Factors

Even if existing pygmy rabbit habitats are maintained in their current condition, populations will remain vulnerable to a variety of situations. Random variations in birth and death rates, fire, disease, flood, and many other catastrophic events become significant when populations are small and few.

The ability of pygmy rabbits to rebound after periods of unfavorable conditions depends, in part, on landscape features that allow animals to disperse and recolonize suitable habitats. Long-term population maintenance, without human intervention, will likely depend upon establishment of habitat corridors which could link the existing small, isolated populations. Such habitat linkages would increase the probability that the habitat which now supports a population would continue to be occupied by pygmy rabbits in the distant future.

Competition from species occupying a similar ecological niche is possible. Green (1979) reports cottontail (*Sylvilagus* spp.) and pygmy rabbits simultaneously using the same burrow

systems. Surveys conducted in Douglas County reveal cottontails, pygmy rabbits, and white-tailed jackrabbits (*Lepus townsendii*) living in close proximity in small sections of isolated habitat. Pygmy rabbits, white-tailed jackrabbits, and black-tailed jackrabbits (*Lepus californicus*) all utilize sagebrush for food (Ingles 1973). In areas of limited habitat, food competition between these species may occur though it is not likely that such competition is significant in limiting pygmy rabbit numbers (F. Dobler, pers. comm.).

Because existing pygmy rabbit colonies are mostly small in size and found in isolated patches of habitat, predators may be a more significant factor in reducing or limiting populations.

One of the many complexities of the benefit/harm balance that applies to grazing in pygmy rabbit habitat is fire. When grazing is eliminated from an area, cheatgrass and vegetative debris increase and provide a fuel load that can lead to a destructive fire. Sagebrush Flat is penetrated by open, poor quality roads that are used for night-time parties and other social activities where fires are sometimes built. The ability of the area to support a pygmy rabbit population could be eliminated by a single range fire.

CONCLUSIONS AND RECOMMENDATION

The pygmy rabbit's range in Washington has declined significantly. Populations were once established in at least five counties of the shrub-steppe dominated region of eastern Washington. Relatively recent investigations of the pygmy rabbit's habitat requirements have demonstrated the importance of both dense sagebrush and deep, loose soil. In the Columbia Basin of eastern Washington, the majority of lands with deep soils are now cultivated which precludes use by pygmy rabbits.

Biologists working in the shrub-steppe zone have surveyed or looked for indications of pygmy rabbit populations since at least 1979. Despite these efforts, the only known extant populations are in Douglas County. These populations, conceptually treated as five distinct pygmy rabbit sites, are subject to a variety of events that could eliminate pygmy rabbits or their habitat. Each of the relatively small populations is vulnerable to habitat destruction due to fire or other natural phenomena such as drought, flooding, intense predation and disease.

Grazing, if not properly monitored and managed, has the potential to damage pygmy rabbit habitat. Sagebrush removal or conversion of pygmy rabbit habitat to cropland would adversely affect currently suitable habitat. Mining of bentonite may impact pygmy rabbits at one site. The few small pygmy rabbit populations that remain in Washington are vulnerable to extirpation from a wide variety of causes.

It is recommended the species be reclassified from threatened to endangered in Washington.

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Appendix A

Washington Administrative Codes

232-12-297, 232-12-011, 232-12-014

WAC 232-12-297 Endangered, threatened, and sensitive wildlife species classification.

PURPOSE

1.1 The purpose of this rule is to identify and classify native wildlife species that have need of protection and/or management to ensure their survival as free-ranging populations in Washington and to define the process by which listing, management, recovery, and delisting of a species can be achieved. These rules are established to ensure that consistent procedures and criteria are followed when classifying wildlife as endangered, or the protected wildlife subcategories threatened or sensitive.

DEFINITIONS

For purposes of this rule, the following definitions apply:

2.1 "Classify" and all derivatives means to list or delist wildlife species to or from endangered, or to or from the protected wildlife subcategories threatened or sensitive.

2.2 "List" and all derivatives means to change the classification status of a wildlife species to endangered, threatened, or sensitive.

2.3 "Delist" and its derivatives means to change the classification of endangered, threatened, or sensitive species to a classification other than endangered, threatened, or sensitive.

2.4 "Endangered" means any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state.

2.5 "Threatened" means any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.

2.6 "Sensitive" means any wildlife species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats.

2.7 "Species" means any group of animals classified as a species or subspecies as commonly accepted by the scientific community.

2.8 "Native" means any wildlife species naturally occurring in Washington for purposes of breeding, resting, or foraging, excluding introduced species not found historically in this state.

2.9 "Significant portion of its range" means that portion of a species' range likely to be essential to the long term survival of the population in Washington.

LISTING CRITERIA

3.1 The commission shall list a wildlife species as endangered, threatened, or sensitive solely on the basis of the biological status of the species being considered, based on the preponderance of scientific data available, except as noted in section 3.4.

3.2 If a species is listed as endangered or threatened under the federal Endangered Species Act, the agency will recommend to the commission that it be listed as endangered or threatened as specified in section 9.1. If listed, the agency will proceed with development of a recovery plan pursuant to section 11.1.

3.3 Species may be listed as endangered, threatened, or sensitive only when populations are in danger of failing, declining, or are vulnerable, due to factors including but not restricted to limited numbers, disease, predation, exploitation, or habitat loss or change, pursuant to section 7.1.

3.4 Where a species of the class Insecta, based on substantial evidence, is determined to present an unreasonable risk to public health, the commission may make the determination that the species need not be listed as endangered, threatened, or sensitive.

DELISTING CRITERIA

4.1 The commission shall delist a wildlife species from endangered, threatened, or sensitive solely on the basis of the biological status of the species being

considered, based on the preponderance of scientific data available.

4.2 A species may be delisted from endangered, threatened, or sensitive only when populations are no longer in danger of failing, declining, are no longer vulnerable, pursuant to section 3.3, or meet recovery plan goals, and when it no longer meets the definitions in sections 2.4, 2.5, or 2.6.

INITIATION OF LISTING PROCESS

5.1 Any one of the following events may initiate the listing process.

5.1.1 The agency determines that a species population may be in danger of failing, declining, or vulnerable, pursuant to section 3.3.

5.1.2 A petition is received at the agency from an interested person. The petition should be addressed to the director. It should set forth specific evidence and scientific data which shows that the species may be failing, declining, or vulnerable, pursuant to section 3.3. Within 60 days, the agency shall either deny the petition, stating the reasons, or initiate the classification process.

5.1.3 An emergency, as defined by the Administrative Procedure Act, chapter 34.05 RCW. The listing of any species previously classified under emergency rule shall be governed by the provisions of this section.

5.1.4 The commission requests the agency review a species of concern.

5.2 Upon initiation of the listing process the agency shall publish a public notice in the Washington Register, and notify those parties who have expressed their interest to the department, announcing the initiation of the classification process and calling for scientific information relevant to the species status report under consideration pursuant to section 7.1.

INITIATION OF DELISTING PROCESS

6.1 Any one of the following events may initiate the delisting process:

6.1.1 The agency determines that a species population may no longer be in danger of failing, declining, or vulnerable, pursuant to section 3.3.

6.1.2 The agency receives a petition from an interested person. The petition should be addressed to the director. It should set forth specific evidence and scientific data which shows that the species may no longer be failing, declining, or vulnerable, pursuant to section 3.3. Within 60 days, the agency shall either deny the petition, stating the reasons, or initiate the

6.1.3 The commission requests the agency review a species of concern.

6.2 Upon initiation of the delisting process the agency shall publish a public notice in the Washington Register, and notify those parties who have expressed their interest to the department, announcing the initiation of the delisting process and calling for scientific information relevant to the species status report under consideration pursuant to section 7.1.

SPECIES STATUS REVIEW AND AGENCY RECOMMENDATIONS

7.1 Except in an emergency under 5.1.3 above, prior to making a classification recommendation to the commission, the Agency shall prepare a preliminary species status report. The report will include a review of information relevant to the species' status in Washington and address factors affecting its status, including those given under section 3.3. The status report shall be reviewed by the public and scientific community. The status report will include, but not be limited to an analysis of:

7.1.1 Historic, current, and future species population trends

7.1.2 Natural history, including ecological relationships (e.g. food habits, home range, habitat selection patterns).

7.1.3 Historic and current habitat trends.

7.1.4 Population demographics (e.g. survival and mortality rates, reproductive success) and their relationship to long term sustainability.

7.1.5 Historic and current species management activities.

7.2 Except in an emergency under 5.1.3 above, the agency shall prepare recommendations for species classification, based upon scientific data contained in the status report. Documents shall be prepared to determine the environmental consequences of adopting the recommendations pursuant to requirements of the State Environmental Policy Act (SEPA).

7.3 For the purpose of delisting, the status report will include a review of recovery plan goals.

PUBLIC REVIEW

8.1 Except in an emergency under 5.1.3 above, prior to making a recommendation to the commission, the agency shall provide an opportunity for interested parties to submit new scientific data relevant to the status report, classification recommendation, and any SEPA findings.

8.1.1 The agency shall allow at least 90 days

8.1.2 The agency will hold at least one public meeting in each of its administrative regions during the public review period.

FINAL RECOMMENDATIONS AND COMMISSION ACTION

9.1 After the close of the public comment period, the agency shall complete a final status report and classification recommendation. SEPA documents will be prepared, as necessary, for the final agency recommendation for classification. The classification recommendation will be presented to the commission for action. The final species status report, agency classification recommendation, and SEPA documents will be made available to the public at least 30 days prior to the commission meeting.

9.2 Notice of the proposed commission action will be published at least 30 days prior to the commission meeting.

PERIODIC SPECIES STATUS REVIEW

10.1 The agency shall conduct a review of each endangered, threatened, or sensitive wildlife species at least every five years after the date of its listing. This review shall include an update of the species status report to determine whether the status of the species warrants its current listing status or deserves reclassification.

10.1.1 The agency shall notify any parties who have expressed their interest to the department of the periodic status review. This notice shall occur at least one year prior to end of the five year period required by section 10.1.

10.2 The status of all delisted species shall be reviewed at least once, five years following the date of delisting.

10.3 The department shall evaluate the necessity of changing the classification of the species being reviewed. The agency shall report its findings to the commission at a commission meeting. The agency shall notify the public of its findings at least 30 days prior to presenting the findings to the commission.

10.3.1 If the agency determines that new information suggests that classification of a species should be changed from its present state, the agency shall initiate classification procedures provided for in these rules starting with section 5.1.

10.3.2 If the agency determines that conditions have not changed significantly and that the classification of the species should remain unchanged, the agency shall recommend to the commission that the species being reviewed shall retain its present classification status.

10.4 Nothing in these rules shall be construed to automatically delist a species without formal commission action.

RECOVERY AND MANAGEMENT OF LISTED SPECIES

11.1 The agency shall write a recovery plan for species listed as endangered or threatened. The agency will write a management plan for species listed as sensitive. Recovery and management plans shall address the listing criteria described in sections 3.1 and 3.3, and shall include, but are not limited to:

11.1.1 Target population objectives

11.1.2 Criteria for reclassification

11.1.3 An implementation plan for reaching population objectives which will promote cooperative management and be sensitive to landowner needs and property rights. The plan will specify resources needed from and impacts to the Department, other agencies (including federal, state, and local), tribes, landowners, and other interest groups. The plan shall consider various approaches to meeting recovery objectives including, but not limited to regulation, mitigation, acquisition, incentive, and compensation mechanisms.

11.1.4 Public education needs

11.1.5 A species monitoring plan, which requires periodic review to allow the incorporation of new information into the status report.

11.2 Preparation of recovery and management plans will be initiated by the agency within one year after the date of listing.

11.2.1 Recovery and management plans for species listed prior to 1990 or during the five years following the adoption of these rules shall be completed within 5 years after the date of listing or adoption of these rules, whichever comes later. Development of recovery plans for endangered species will receive higher priority than threatened or sensitive species.

11.2.2 Recovery and management plans for species listed after five years following the adoption of these rules shall be completed within three years after the date of listing.

11.2.3 The agency will publish a notice in the Washington Register and notify any parties who have expressed interest to the department interested parties of the initiation of recovery plan development.

11.2.4 If the deadlines defined in sections 11.2.1 and 11.2.2 are not met the department shall notify the public and report the reasons for missing the deadline and the strategy for completing the plan at a

commission meeting. The intent of this section is to recognize current department personnel resources are limiting and that development of recovery plans for some of the species may require significant involvement by interests outside of the department, and therefore take longer to complete.

11.3 The agency shall provide an opportunity for interested public to comment on the recovery plan and any SEPA documents.

CLASSIFICATION PROCEDURES REVIEW

12.1 The agency and an ad hoc public group with members representing a broad spectrum of interests, shall meet as needed to accomplish the following:

12.1.1 Monitor the progress of the development of recovery and management plans and status reviews, highlight problems, and make recommendations to the department and other interested parties to improve the effectiveness of these processes.

12.1.2 Review these classification procedures six years after the adoption of these rules and report its findings to the commission.

AUTHORITY

13.1 The commission has the authority to classify wildlife as endangered under RCW 77.12.020. Species classified as endangered are listed under WAC 232-12-014, as amended.

13.2 Threatened and sensitive species shall be classified as subcategories of protected wildlife. The commission has the authority to classify wildlife as protected under RCW 77.12.020. Species classified as protected are listed under WAC 232-12-011, as amended.

[Statutory Authority: RCW 77.12.020. 90-11-066 (Order 442), § 232-12-297, filed 5/15/90, effective 6/15/90.]

WAC 232-12-011 Wildlife classified as protected shall not be hunted or fished. Protected wildlife are designated into three subcategories: Threatened, sensitive, and other.

(1) Threatened species are any wildlife species native to the state of Washington that are likely to become endangered within the foreseeable future throughout a significant portion of their range within the state without cooperative management or removal of threats.

Protected wildlife designated as threatened include ferruginous hawk, *Buteoregalis*; bald eagle, *Haliaeetus leucocephalus*; western pond turtle, *Clemmys marmorata*; green sea turtle, *Cheloniia mydas*; loggerhead sea turtle, *Caretta caretta*; Oregon silverspot butterfly, *Speyeria zerene hippolyta*; pygmy rabbit, *Brachylagus idahoensis*.

(2) Sensitive species are any wildlife species native to the state of Washington that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats.

(3) Other protected wildlife.

Other protected wildlife include all birds not classified as game birds, predatory birds, or endangered species[,] or designated as threatened species or sensitive species; and fur seal, *Callorhinus ursinus*; fisher, *Martes pennanti*; wolverine, *Gulo luscus*; western gray squirrel, *Sciurus griseus*; Douglas squirrel, *Tamiasciurus douglasii*; red squirrel, *Tamiasciurus hudsonicus*; flying squirrel, *Glaucomys sabrinus*; golden-mantled ground squirrel, *Callospermophilus saturatus*; chipmunks, *Eutamias*; cony or pika, *Ochotona princeps*; hoary marmot, *Marmota caligata* and *olympus*; all wild turtles not otherwise classified as endangered species, or designated as threatened species or sensitive species; mammals of the order *Cetacea*, including whales, porpoises, and mammals of the suborder *Pinnipedia* not otherwise classified as endangered species, or designated as threatened species or sensitive species. This section shall not apply to hair seals and sea lions which are threatening to damage or are damaging commercial fishing gear being utilized in a lawful manner or when said mammals are damaging or threatening to damage commercial fish being lawfully taken with commercial gear.

[Statutory Authority: RCW 77.12.020. 90-11-065 (Order 441), § 232-12-011, filed 5/15/90, effective 6/15/90. Statutory Authority: RCW 77.12.040. 89-11-061 (Order 392), § 232-12-011, filed 5/18/89; 82-19-026 (Order 192), § 232-12-011, filed 9/9/82; 81-22-002 (Order 174), § 232-12-011, filed 10/22/81; 81-12-029 (Order 165), § 232-12-011, filed 6/1/81.]

Reviser's note: RCW 34.05.395 requires the use of underlining and deletion marks to indicate amendments to existing rules, and deems ineffectual changes not filed by the agency in this manner. The bracketed material in the above section does not appear to conform to the statutory requirement.

WAC 232-12-014 Wildlife classified as endangered species. Endangered species include: Columbian white-tailed deer, *Odocoileus virginianus leucurus*; Mountain caribou, *Rangifer tarandus*; Blue whale, *Balaenoptera musculus*; Bowhead whale, *Balaena mysticetus*; Finback whale, *Balaenoptera physalus*; Gray whale, *Eschrichtius gibbosus*; Humpback whale, *Megaptera novaeangliae*; Right whale, *Balaena glacialis*; Sei whale, *Balaenoptera borealis*; Sperm whale, *Physeter catodon*; Wolf, *Canis lupus*; Peregrine falcon, *Falco peregrinus*; Aleutian Canada goose, *Branta canadensis luecoparcia*; Brown pelican, *Pelecanus occidentalis*; Leatherback sea turtle, *Dermochelys coriacea*; Grizzly bear, *Ursus arctos horribilis*; Sea Otter, *Enhydra lutris*; White pelican, *Pelecanus erythrorhynchos*; Sandhill crane, *Grus canadensis*; Snowy plover, *Charadrius alexandrinus*; Upland sandpiper, *Bartramia longicauda*; Northern spotted owl, *Strix occidentalis*.

[Statutory Authority: RCW 77.12.020(6). 88-05-032 (Order 305), § 232-12-014, filed 2/12/88. Statutory Authority: RCW 77.12.040. 82-19-026 (Order 192), § 232-12-014, filed 9/9/82; 81-22-002 (Order 174), § 232-12-014, filed 10/22/81; 81-12-029 (Order 165), § 232-12-014, filed 6/1/81.]