State Wildlife Action Plan Update

Appendix A-1

Species of Greatest Conservation Need

Fact Sheets

MAMMALS

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Washington Department of Fish and Wildlife
2015

Appendix A-1

SGCN Mammals – Fact Sheets

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What is Included in Appendix A-1

Introduction
Appendix A-1 is one component of the State Wildlife Action Plan (SWAP) Update, and contains information about mammals included in our Species of Greatest Conservation Need (SGCN) list for 2015. Included are fact sheets for each of the mammals identified as Species of Greatest Conservation Need in the 2015 SWAP. The information provided includes a summary of the conservation concern and conservation status, a description of distribution and habitat, climate change sensitivity and an overview of key threats and conservation actions needed.

Range and Habitat Distribution Maps
For a selected number of species (those for which sufficient data was available), range and habitat distribution maps have been developed. The availability of range maps is indicated immediately under the name of the animal.

Separate documents are provided with similar information for birds (Appendix A2), amphibians and reptiles (Appendix A3), fish (Appendix A4) and invertebrates (Appendix A5).

What it means to be an SGCN
The SGCN list includes both animals that have some form of official protection status and those which may be in decline, but are not yet listed as part of either the Federal or State Endangered Species programs. One of the purposes of the SWAP is to direct conservation attention to species and habitats *before* they become imperiled and recovery becomes more difficult and costly. Presence on this list does not necessarily mean that conservation attention will be directed towards the animal; rather, that conservation actions for the species are *eligible* for State Wildlife Grants funding, and may be more competitive for other grant programs. It also raises the profile of an animal to a wide audience of conservation partners and may encourage other organizations to initiate projects that may benefit the species.

Climate Vulnerability
Please see Chapter 5 for an explanation of the methodology used to assess climate vulnerability. For a full list of all the SGCN ranks, including a narrative description of sensitivity and references, please see Appendix C.

Explanation of terms used in the document
Please see Section B (page 104) for a description of terms and abbreviations used in this document.

Alphabetical List of Species
For an alphabetical list of all the mammals included, please see Section A (page 92).

References
References are provided separately with each fact sheet, and also collectively for all SGCN mammals in the REFERENCES section at the end of this document.

RABBITS

AMERICAN PIKA (*Ochotona princeps*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

The American Pika is a montane talus habitat specialist that may face threats from climate change.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5	S5	Unknown/unknown	High

Biology and Life History

Photo: S. Burgdorf

American Pikas are habitat specialists that live year-round in talus fields that are surrounded by meadows or forests, usually located above 8200 feet. Talus rocks generally range in size from 8 inches to 6.5 feet in diameter. The species is sensitive to temperatures above 78° F and relies on winter snow pack to insulate them from extreme cold conditions. Pikas are generalist herbivores that cache food in summer for winter consumption. Food sources typically include grasses, forbs, and leaves; ferns, moss and conifer needles may also be eaten depending on availability. Pikas reproduce in summer and may have two litters averaging one to three young/litter. However, usually only young born in the first litter survive to weaning. In most areas, births begin in May and peak in June, but young may be born as early as March in some low elevation areas. Young are dependent on their mother for at least 18 days, and are weaned as early as 3 to 4 weeks. Juveniles establish territories and hay piles in the summer of birth, but do not breed until their second summer. Maximum lifespan is 7 years.

Distribution and Abundance

American Pikas are found throughout the Cascade Mountains and at higher elevations of the northeast regions of Washington where suitable talus fields in close proximity to food resources are found. Although they are considered a high elevation species, Pika populations have been found at low elevations near sea level in the Columbia River Gorge and at selected locations in Snohomish and Skagit Counties as low as 1150 feet. Pika density is correlated with habitat size and quality. Population sizes and trends in Washington are unknown.

Habitat

Restricted to rocky talus slopes, primarily the talus-meadow interface. Often above tree line up to limit of vegetation. Also found at lower elevations in rocky areas within forests or near lakes. Occasionally on mine tailings, or piles of lumber or scrap metal. Does not dig burrows but may enlarge dens or nest sites under rock.

References

Bruggeman, J. E. 2011. Factors affecting pika populations in the North Cascades National Park Service Complex. Final Report, to North Cascades National Park Service, 110pp.

Smith, A. T. and M. L. Weston. 1990. *Ochotona princeps*. Mammalian Species 352:1-8.

Varner, J. and M. D. Dearing. 2014. Dietary plasticity in pikas as a strategy for atypical resource landscapes. Journal of Mammalogy 95:72-81.

American Pika: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Climate change and severe weather	Climate change may be affecting species distribution and population trends.	Work with partners to better understand distribution of occupied sites; monitor to assess impacts of warming environment.	Nothing current - new action needed	Both
2	Fish and wildlife habitat loss and degradation	Disturbance to microclimate on talus slopes. Increase in rock climbing and bouldering at select American Pika sites in Columbia River Gorge.	Work with partners to better understand distribution of occupied sites; evaluate recreation intensity and access.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

BLACK-TAILED JACKRABBIT (*Lepus californicus*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

Once abundant and broadly distributed in eastern Washington, the species is now rare and sparsely distributed due to habitat loss from fragmentation and possibly disease.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G5	S2S3	Low/declining	Moderate

Biology and Life History

Black-tailed Jackrabbits are herbivores that prefer green, succulent vegetation when available. In general, their diets are mainly grasses and forbs in summer and shrubs in winter. The species forages in the early mornings, late evenings and at night. Home ranges average less than 42 acres in size. Females are larger in body size than males. Males can breed after 7 months of age, but females typically do not breed during their first year. The length of the breeding season is variable and dependent on latitude and environmental factors. In Washington, breeding begins in February and extends through May. Females in the Pacific Northwest have up to two litters per year, with four to six kits born per litter. The gestation period ranges from 41 to 47 days. Females give birth to their young in shallow depressions (forms) in the soil. Young become independent of maternal care at two to three months of age. Most Black-tailed Jackrabbits do not live more than 1 year and maximum longevity is 7 to 8 years.

Photo: G. Lasley

Distribution and Abundance

Populations in Washington are limited to the Columbia Plateau and are declining. Population size is small but additional surveys are needed to determine the species status.

Habitat

Black-tailed Jackrabbits occupy areas of shrub-steppe with sagebrush, rabbitbrush, and areas of mixed grass and sagebrush or rabbitbrush. This species prefers open, grass-dominated sites at night for feeding, and retreat to areas of shrub cover during the day.

References

Best, T. L. 1996. *Lepus californicus*. Mammalian Species 530:1-10.

Flinders, J. T. and J. A. Chapman. 2003. Black-tailed jackrabbit. Pp 126-146 in G. A. Feldhamer, B. C. Thompson, and J. A. Chapman, editors. Wild mammals of North America biology management and conservation, 2nd edition. Johns Hopkins University Press, Baltimore, Maryland.

Black-tailed Jackrabbit: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss and degradation	Habitat loss and degradation of shrub-steppe and grasslands due to historic unsustainable grazing practices and invasion of exotic plants.	Conserve existing and restore degraded shrub-steppe and grassland habitats to provide necessary cover and food resources.	Current insufficient	Both
2	Fish and wildlife habitat loss and degradation	Conversion of grasslands and shrub-steppe to cropland.	Conserve existing and restore degraded shrub-steppe and grassland habitats affected by agriculture to provide necessary cover and food resources. Private landowner incentives such as CRP would be an example of beneficial habitat management.	Current insufficient	Both
3	Small population size	The species now only occupies a small portion of its historic range in the state and small sub-populations may be susceptible to local extinction.	Determine potential need and feasibility of reintroductions or augmentations to boost population.	Current insufficient	Both
4	Disease	Disease may have contributed to population declines.	Assess potential for Tularemia as a factor contributing to population decline.	Current insufficient	Both
5	Overharvesting of biological resources	Control of Black-tailed Jackrabbits through shooting, poisoning, and trapping may be a contributor to population declines.	Assess current levels of mortality due to these practices and take steps to minimize lethal control.	Current insufficient	Both
6	Resource information collection needs	Quantitative data on distribution and abundance are lacking.	Determine and map distribution; investigate cause of declines.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

PYGMY RABBIT (*Brachylagus idahoensis*)

Conservation Status and Concern

The Columbia Basin Pygmy Rabbit, a distinct population segment (DPS) of this species, is a sagebrush obligate associated with shrub-steppe in eastern Washington. Large-scale loss and fragmentation of shrub-steppe habitat were likely the primary factors contributing to decline, but once the population dropped below a certain threshold, other factors such as environmental events (extreme weather and fire), predation, disease, and inbreeding likely became threats. A major recovery effort is currently underway for this species.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered (Columbia Basin DPS only)	Endangered	Yes	G4	S1	Low/increasing	Moderate-high

Biology and Life History

Photo: P. Hendricks

This is the smallest rabbit species in North America and one of only two native rabbits known to dig its own burrows. Burrows are used for thermoregulation and safety from predators. Specialized natal burrows are excavated separate from residential burrows. Big sagebrush is the primary food source, comprising 90 percent of the winter diet, but grasses and forbs are also eaten in spring and summer. Activity occurs throughout the year. Pygmy Rabbits may be active at any time of day or night, but most activity is crepuscular. Breeding extends from February to July. Females have two to four litters per year, with up to six kits per litter. Predators include weasels, Coyotes, American Badgers, hawks, owls, and likely other carnivorous mammals and birds.

Distribution and Abundance

The Columbia Basin DPS is genetically distinct from the remainder of the species, and is believed to have been isolated for at least 10,000 years, perhaps much longer. Pygmy Rabbits were known from six relatively small, isolated populations in Central Washington in the 1990s. By 2001, only one population remained at Sagebrush Flat Wildlife Area (SBFWA) in Douglas County. In 2001, some of the remaining rabbits were captured and placed in a captive breeding program. Captive breeding was not able to produce sufficient numbers of rabbits for reintroduction and in 2011 a new strategy for recovery was developed. Semi-wild breeding in large (6 to 11 acre) enclosures was begun in Central Washington and offspring are released back to the wild. Future status depends on the success of this program.

Habitat

Due to its sagebrush and burrowing requirements, this species most often occurs in dense stands of big sagebrush growing in deep loose soils. Burrow systems are generally found on mounds or gentle slopes. Corridors of dense shrub cover connecting areas of suitable habitat are critical to recovery efforts.

References

US Fish and Wildlife Service (USFWS). 2012. Recovery plan for the Columbia Basin distinct population segment of the pygmy rabbit (*Brachylagus idahoensis*). U.S. Fish and Wildlife Service, Portland, Oregon.

WDFW 1995. Washington State recovery plan for the pygmy rabbit. Olympia, WA.

Pygmy Rabbit: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Conversion of habitat to agriculture and development. Habitat fragmentation may hamper recovery efforts.	Use landowner incentives, conservation easements, Safe Harbor Agreements, and acquisitions to protect significant habitats. Coordinate with FSA, NRCS and USFWS.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Conversion of habitat to agriculture and development. Habitat fragmentation may hamper recovery efforts.	Recover species in the Columbia Basin through semi-wild breeding, releases, and translocations while working to recover habitat.	Current insufficient	Both
3	Resource information collection needs	Causes of the population decline in Washington are unknown, need to monitor status of reintroduced population closely to determine any potential problems and adjust accordingly.	Monitor reintroduced population for potential problems and success, and determine whether recovery actions are effective. Develop survey methods to efficiently detect long-distance dispersers from release sites.	Current insufficient	WDFW
4	Agriculture and aquaculture side effects	Livestock may cause degradation of shrub-steppe habitat (decreased quantity and quality of forage) and damage burrow systems.	Use land acquisitions, conservation easements and landowner agreements to protect significant habitats. Coordinate with FSA and NRCS.	Current insufficient	Both
5	Agriculture and aquaculture side effects	Old CRP lands do not provide suitable habitat for the species.	Continue to engage FSA and NRCS to encourage restoring old CRP habitat to native species through their various programs.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

WHITE-TAILED JACKRABBIT (*Lepus townsendii*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

Once abundant and broadly distributed across the bunchgrass communities of eastern Washington, the species is now rare and sparsely distributed due to the loss, degradation, and fragmentation of habitat and possibly disease and competition with Black-tailed Jackrabbits.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G5	S2S3	Low/declining	Moderate

Biology and Life History

Photo: Connormah

White-tailed Jackrabbits are nocturnal herbivores that feed primarily on grasses and forbs and secondarily on shrubs. Home ranges may extend 1.2 to 1.9 miles in diameter. Females are larger in body size than males. Individuals may begin to breed as early as 7 months of age. Breeding season begins in late February and may extend into May, with up to four litters produced per year. Nests for young are made of grasses and dry leaves and are hidden in vegetation. The gestation period may last from 30 to 43 days, depending on environmental factors, and the typical litter size is four or five young. Young become independent of maternal care at about 2 months of age. Maximum longevity is about 8 years. The species is typically more solitary than other hares.

Distribution and Abundance

This species was once common across the extensive grasslands of eastern Washington, but with the reduction of bunchgrasses due to overgrazing and encroachment of Black-tailed Jackrabbits, it is now rare and restricted primarily to the Okanogan Valley.

Habitat

Hilly, bunchgrass sites are preferred by White-tailed Jackrabbits. In winter, this species descends to sagebrush flats in valley bottoms. It rests by day in shallow holes dug in the ground at the bases of rocks or shrubs, and in winter rests in cavities connected by tunnels beneath the snow.

References

Dalquest, W. W. 1948. Mammals of Washington. University of Kansas Publications, Museum of Natural History 2:1-444.

Lim, B. K. 1987. *Lepus townsendii*. Mammalian Species 288:1-6.

White-tailed Jackrabbit: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Habitat loss and degradation of shrub-steppe and grasslands due to historic unsustainable grazing practices and invasion of exotic plants.	Conserve existing and restore degraded shrub-steppe and grassland habitats to provide necessary cover and food resources.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Conversion of grasslands and shrub-steppe to cropland.	Conserve existing and restore degraded shrub-steppe and grassland habitats affected by agriculture to provide necessary cover and food resources. Private landowner incentives such as CRP would be an example of beneficial habitat management.	Current insufficient	Both
3	Population size	The species now only occupies a small portion of its historic range in the state and small sub-populations may be susceptible to local extinction.	Determine potential need and feasibility of reintroductions or augmentations to boost population.	Current insufficient	Both
4	Disease	Disease may have contributed to population declines.	Assess potential for Tularemia as a factor contributing to population decline.	Current insufficient	Both
5	Overharvesting of biological resources	Control of White-tailed Jackrabbits through shooting, poisoning, and trapping may be a contributor to population declines.	Assess current levels of mortality due to these practices and take steps to minimize lethal control.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

SHREWS

DESTRUCTION ISLAND SHREW (*Sorex trowbridgii destructioni*)

Conservation Status and Concern

This subspecies is endemic to Destruction Island. Its status and biology have not been assessed, but it may be threatened by herbivory from introduced European Rabbits.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Species of Concern	None	No	G5T1Q	S1	Unknown/unknown	Low-moderate

Biology and Life History

This small shrew is a subspecies of Trowbridge's Shrew. It is primarily insectivorous, but also feeds on spiders, worms, and centipedes. It is active year-round.

Photo: UC Santa Cruz

Distribution and Abundance

This subspecies occurs only on Destruction Island in Jefferson County. Thirty specimens were collected in 1941 and six more were taken in 1983. The apparent decline in trapping success between these two capture efforts suggests a possible population decline. No further information on population status has been gathered since 1983.

Habitat

Grass, areas bordering brush, and human structures are the primary habitats of this shrew on Destruction Island.

References

Aubry, K. B., and S. D. West. 1984. The status of native and introduced mammals on Destruction Island, Washington. Murrelet 65:80-83.

Johnson, R. E., and K. M. Cassidy. 1997. Mammals of Washington state: location data and modeled distributions. Washington State GAP Analysis, Volume 3. Washington Cooperative Fish and Wildlife Research Unit, Seattle, Washington.

NatureServe. 2014. NatureServe Explorer: an online encyclopedia of life [web application]. Version 7.1. NatureServe, Arlington, Virginia. <http://explorer.natureserve.org> (accessed November 24, 2014).

Destruction Island Shrew: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Status and life history have not been assessed.	Current status and life history should be assessed.	Current insufficient	Both
2	Invasive and other problematic species	Herbivory by introduced European Rabbits may be causing a decline in habitat quality.	Eradication of European Rabbits is needed on Destruction Island.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

MERRIAM'S SHREW (*Sorex merriami*)

Conservation Status and Concern

This relatively little known species appears rare but widespread in much of the Columbia Basin and several adjoining localities of eastern Washington. Additional sampling is needed to clarify its status. It may be threatened by habitat loss and fragmentation, and by the invasion of cheatgrass, which is probably detrimental by increasing the occurrence of wildfires.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G5	S3S4	Unknown/unknown	Low-moderate

Biology and Life History

Merriam's Shrew is an insectivore that appears adapted to feeding on hard-bodied prey. Diet includes spiders, beetles, caterpillars, crickets, and wasps. Shrews are active year-round and forage under the snow in colder regions. In Washington, pregnant females have been captured from April to July, and nursing females in March, July, and October. Litter size ranges from five to seven young.

From Ingles 1965

Distribution and Abundance

This species occurs throughout much of the western United States. In Washington, it inhabits much of the Columbia Basin and its margins. A record in the southern Okanagan region of British Columbia suggests it probably also occurs in Okanogan County, Washington. No estimates of population size or density are available for Washington, but the species appears relatively rare. Where present, trapping effort generally requires at least several hundred trap nights for each individual captured. Population trends can only be hypothesized from the reduction in shrub-steppe habitats. Less than 50 percent of the historical shrub-steppe in Washington remains and much of the remainder is fragmented and degraded by wildfires, cheatgrass, and unsustainable grazing in the past.

Habitat

In Washington, Merriam's Shrew is generally found in sagebrush-bunchgrass habitats, especially in areas with Big Sagebrush, rabbitbrush, and bitterbrush. In other states, they have been captured in mountain-mahogany, pinyon-juniper, conifer woodlands, shortgrass prairie, and in wetlands or riparian situations within drier habitats.

References

Johnson, M. L., and C. W. Clanton. 1954. Natural history of *Sorex merriami* in Washington state. Murrelet 35:1- 4.

Johnson, R. E., and K. M. Cassidy. 1997. Mammals of Washington state: location data and modeled distributions. Washington state GAP analysis, Volume 3. Washington Cooperative Fish and Wildlife Research Unit, Seattle, Washington.

Verts, B. J., and L. N. Carraway. 1998. Land mammals of Oregon. University of California Press, Berkeley, California.

Merriam's Shrew: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Population status and life history have not been well assessed in Washington.	Current status and life history should be assessed.	Current insufficient	Both
2	Fish and wildlife habitat loss and degradation	Habitat loss and fragmentation have likely impacted the population.	Use landowner incentives, conservation easements, and acquisitions to protect significant habitats. Initiate efforts to restore and manage habitats.	Current insufficient	Both
3	Invasive and other problematic species	Invasion of shrub-steppe by cheatgrass and other non-native plants has degraded habitats through increased fire occurrence and other processes.	Restore and manage habitats degraded by invasive species.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

PREBLE'S SHREW (*Sorex preblei*)

Conservation Status and Concern

Preble's Shrew is a poorly known species that appears to be extremely rare in Washington; additional sampling is needed to understand distribution, habitat needs, and factors that affect populations.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Species of Concern	Candidate	Yes	G4	S1	Unknown/unknown	Low-moderate

Biology and Life History

Preble's Shrew is an insectivore; mandible morphology suggests a diet of soft-bodied invertebrates, such as spiders and grubs. Litter size is estimated to be three to six young. Shrews are active throughout the year and forage under the snow in colder regions. Life expectancy is less than 1.5 years.

From Ingles 1965

Distribution and Abundance

As currently recognized, the range of Preble's Shrew includes southern British Columbia, south to northeastern California, northern Nevada and Utah and east to western Wyoming and Colorado, and south to New Mexico and north to include much of Montana. However, a future taxonomic revision may split the species, restricting the name *S. preblei* to populations in Washington, Oregon, British Columbia, California and Nevada. In Washington, the only records of Preble's Shrew were from the Blue Mountains in 1956 to 1958, until 2004 when a single specimen was captured in Douglas County. There are no density estimates or data on population numbers in Washington or elsewhere. Preble's Shrews seem to be very rare, though this may partly be an artifact of inadequate sampling. Population trends can only be hypothesized from the reduction in steppe habitats; less than 50 percent of the historical shrub-steppe in Washington remains and much of the remainder is fragmented and degraded.

Habitat

Preble's Shrews are most often associated with sagebrush and grasses, but have been collected in a wide variety of habitats, including subalpine shrubland, whitebark pine, and wetlands. In Washington, Preble's Shrews have been captured in dense lodgepole pine, dense subalpine fir/lodgepole, and grand fir/Engelmann spruce forest at 5000 to 6000 feet in the Blue Mountains, which is rather atypical habitat for the species. It was also recently captured in a Conservation Reserve Program grassland.

References

Carraway, L. N., and B. J. Verts. 1999. Records of reproduction in *Sorex preblei*. Northwestern Naturalist 80:115-116.

Cornely, J. E., L. N. Carraway, and B. J. Verts. 1992. *Sorex preblei*. Mammalian Species 416:1-3.

Gitzen, R. A., J. E. Bradley, M. R. Kroeger, and S. D. West. 2009. First record of Preble's Shrew (*Sorex preblei*) in the northern Columbia Basin, Washington. Northwestern Naturalist 90: 41-43.

Hope, A. G., K. A. Speer, J. R. Demboski, S. L. Talbot, and J. A. Cook. 2012. A climate for speciation: rapid spatial diversification within the *Sorex cinereus* complex of shrews. Molecular Phylogenetics and Evolution 64: 671–684.

Johnson, R. E., and K. M. Cassidy. 1997. Mammals of Washington state: location data and modeled distributions. Washington State GAP Analysis, Volume 3. Washington Cooperative Fish and Wildlife Research Unit, Seattle, Washington.

Preble's Shrew: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Lack of data on current distribution and population status.	Determine distribution and population status.	Current insufficient	Both
2	Resource information collection needs	Lack of adequate information on threats.	As better population distribution information is obtained, assess threats that may exist.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

BATS

HOARY BAT (*Lasiurus cinereus*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

This is a widely distributed migratory bat that is vulnerable to mortality from wind turbines during migration. It also faces threats from habitat alteration throughout its range.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5	S3	Moderate/unknown	Low-moderate

Biology and Life History

Photo: Humboldt State

The Hoary Bat is the largest bat in Washington and is named for its distinctive brownish-grey, white-tipped pelage. Hoary Bats are relatively fast fliers with limited maneuverability that tend to favor open areas for foraging. They feed chiefly on large moths and to a lesser extent on other insects. Hoary Bats roost in the open foliage of deciduous and coniferous trees. Unlike most bat species that aggregate in maternity colonies, females with young roost solitarily and select trees that provide shelter from wind, stable sunlight exposure, and are near a clearing. Females typically give birth to one litter of twins in May and June, although up to four pups have been documented. Young are slow to develop and are capable of sustained flight at about 5 weeks of age. However, they remain with their mothers for several weeks after they begin flying. Males roost solitarily.

Distribution and Abundance

Hoary Bats are the most widely distributed bat species in North America and are found throughout Washington in forested areas with associated clearings, from sea level to at least 5300 feet. They occur in

the Columbia Basin if trees are available and sometimes in arid steppe during migration. Hoary Bats are resident in summer and considered to be a migratory species. In Washington, migrating individuals have been documented in spring and fall; however a few records document presence in winter. Winter range is unknown, but presumed to be located in southern California and Mexico.

Habitat

Habitat includes primarily deciduous and coniferous forests and woodlands, including areas altered by humans. Roost sites are usually in tree foliage 10 to 16 feet above the ground, with dense foliage above and open flying room below, often at the edge of clearings. In Saskatchewan, reproductive females roosted on the south (especially southeast) side of white spruce trees, where wind speed was reduced.

References

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Klug, B. J., D. A. Goldsmith and R. M. R. Barclay. 2012. Roost selection by the solitary, foliage-roosting hoary bat (*Lasiurus cinereus*) during lactation. Canadian Journal of Zoology 90:239-336.

Nagorsen, D. W. and R. M. Brigham. 1993. The bats of British Columbia. UBC Press, Vancouver, British Columbia.

Willis, C. K. R. and R. M. Brigham. 2005. Physiological and ecological aspects of roost selection by reproductive female hoary bats (*Lasiurus cinereus*). Journal of Mammalogy 8:85-94.

Hoary Bat: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Energy development and distribution	The species is highly susceptible to mortality from wind energy facilities.	Monitor wind farms for mortality, avoid siting wind farms in areas of high bat activity, and encourage power companies to curtail wind turbine use during periods of low wind speeds.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Logging and conversion to younger even-aged forest stands likely reduces the quality of roosting habitat.	Encourage logging techniques that maintain complex forest structure and large trees and snags.	Current insufficient	Both
3	Resource information collection needs	Better information is needed on migration behavior and routes, and the extent that individuals winter in WA.	Conduct research on migration patterns.	Current insufficient	Both
4	Resource information collection needs	Better information is needed on habitat requirements and population status.	Conduct research on habitat requirements and population status.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

KEEN'S MYOTIS (*Myotis keenii*)

Conservation Status and Concern

In Washington, this species is poorly known and probably rare. Loss of large decadent trees and snags is likely an important threat.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G2G3	S1	Low/unknown	Moderate-high

Biology and Life History

Photo: Alaska Dept. Fish & Game

Keen's Myotis is one of three small, long-eared myotis bats in Washington. It is so morphologically similar to the western long-eared bat (*M. evotis*) that species determination between the two is based on small skeletal differences and the two may actually be one species. Keen's Myotis flies rather slowly while foraging and is adapted to eat a variety of insects including spiders, caddis flies, moths, and flies. It is able to glean prey as well as gather prey on the wing. Its physical characteristics of long ears, short, broad wings, and high frequency, low intensity echolocation are adaptations that enhance the ability to fly and forage in structurally complex forests. Keen's Myotis females return to maternity colonies in May and give birth to a single pup between early June and mid- to late July. Males roost solitarily. Hibernation begins in late summer or fall.

Distribution and Abundance

This species has one of the smallest ranges of any North American bat, occurring in coastal areas from southeast Alaska to northwestern Washington, including the Olympic Peninsula and Puget Sound. Abundance in Washington is unknown, but it is assumed to be rare. Trend is unknown.

Habitat

Keen's Myotis is closely associated with low elevation, moist, mature coastal conifer forests during the active season and may move to hibernacula in mid-elevation caves for winter. Summer roosts are in tree cavities, snags, rock crevices, small caves, and buildings. The few documented maternity sites have been found in caves and trees. Males often roost in large trees or snags. Roost sites may be limiting in some parts of the range. Foraging occurs more frequently in mature and old growth forests than clearcuts or young forests; riparian areas are likely important foraging habitats.

References

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COSEWIC. 2003. COSEWIC assessment and update status report on Keen's long-eared bat *Myotis keenii* in Canada. Committee on the Status of Endangered Wildlife in Canada, Ottawa, Ontario.

Hayes, G. and G. J. Wiles. 2013. Washington bat conservation plan. Washington Department of Fish and Wildlife, Olympia, Washington.

Keen's Myotis: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Species requirements may be misunderstood because of speciation question.	Conduct a full genetic analysis to understand relationship with western long-eared bats and to determine species identification traits.	Current insufficient	External
2	Resource information collection needs	Better understanding of habitat requirements is needed.	Conduct research to understand habitat relationships, including year-round roosting requirements.	Current insufficient	Both
3	Resource information collection needs	Lack of adequate information on threats.	As better population distribution is obtained, assess threats that may exist.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

SILVER-HAIRED BAT (*Lasionycteris noctivagans*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

Although relatively common in much of Washington, Silver-haired Bats experience extensive mortality at wind turbines. Loss of large roost trees and snags locally and along migration routes is another important concern.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5	S3	Moderate/unknown	Low-moderate

Biology and Life History

The Silver-haired Bat is a medium-sized bat with very dark pelage tipped with silver or white. In Washington, some individuals migrate while others hibernate. Males and females occupy separate summer ranges throughout much of their range, but in Washington, the trend towards summer habitat separation may be less pronounced. Silver-haired Bats probably breed in fall and winter, with fertilization delayed until spring. One or two pups are born in June or July. Lactating females roost in small colonies of typically 5 to 25 individuals in the cavities of large dead or dying trees. Males and non-reproductive females roost solitarily in cavities or under loose bark of large decaying trees. Young are able to fly at about three weeks. Silver-haired Bats forage on a variety of small to medium-sized flying insects, especially

Photo: B. Fenton

moths and flies, over water bodies within forested areas. They winter alone or in small groups; both sexes may be found together. Non-migrating individuals may hibernate in trees as well as man-made structures. Wintering Silver-haired Bats may rouse from torpor and forage in western Washington when conditions are sufficiently warm.

Distribution and Abundance

Silver-haired Bats occur broadly across North America, from southeastern Alaska to northeastern Mexico. They are documented throughout Washington, predominantly where forest and riparian habitats occur. Surveys indicate that the species is relatively common in a number of areas of the state, but population trend is unknown.

Habitat

Silver-haired Bats occupy forests and riparian areas. They prefer uneven-aged forests with large dead and dying trees that offer structural complexity rather than intensively managed, even-aged stands. Large snags provide suitable roosts trees and a multi-layered canopy structure is favorable to flying and foraging. They are also sometimes found in man-made structures, especially during migration or hibernation.

References

Hayes, G. and G. J. Wiles. 2013. Washington bat conservation plan. Washington Department of Fish and Wildlife, Olympia, Washington.

Nagorsen, D. W. and R. M. Brigham. 1993. The bats of British Columbia. UBC Press, Vancouver, British Columbia.

Silver-haired Bat: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Energy development and distribution	The species is highly susceptible to mortality from wind energy facilities.	Monitor wind farms for mortality, avoid siting wind farms in areas of high bat activity, and encourage power companies to curtail wind turbine use during periods of low wind speeds.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Logging and conversion to younger even-aged forest stands probably reduces the quality of roosting habitat.	Encourage logging techniques that maintain complex forest structure and large trees and snags.	Current insufficient	Both
3	Resource information collection needs	Better information is needed on migration behavior and routes, and the extent that individuals winter in WA.	Conduct research on migration patterns.	Current insufficient	Both
4	Management decision needs	Better information is needed on habitat requirements and population status.	Conduct research on habitat requirements and population status.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

SPOTTED BAT (*Euderma maculatum*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

Individual populations are apparently disjunct and may be vulnerable to human disturbance. Population trends, life history, and habitat requirements are unknown.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Monitor	No	G4	S3	Low/unknown	Low

Biology and Life History

Photo: P. Cryan

The Spotted Bat is a relatively large bat identified by its large pink ears and white spots on dark pelage. It is one of the few bats with a call audible to humans that resembles insect-like high-pitched metallic clicks. Spotted Bats are aerial insectivores that feed on medium-sized moths, especially noctuid moths. This species is solitary and is never found in colonies. Females produce one young per year between mid-June to early July. Individuals forage alone, visiting several sites a night and returning to them over consecutive evenings. Day roosts are located in sheer, high cliffs. Night roosts are seldom used. Wintering behavior is poorly understood, but the species presumably hibernates near its summer range.

Distribution and Abundance

The Spotted Bat inhabits arid environments in western North America from south-central British Columbia to central Mexico; the core area of its distribution appears to be the southwestern United States. It was not known in Washington until 1991 but is now documented in seven eastern Washington counties. Populations are likely disjunct and highly localized around suitable roosting cliffs and water sources and absent in intervening areas. Population size in Washington is probably relatively small, and trend is unknown.

Habitat

Spotted Bat presence is most dependent on the availability of high, sheer cliffs in arid land, but in Washington and the Okanogan Valley of British Columbia, they forage over a variety of habitats adjacent to cliffs, including ponderosa pine forests, hay fields, rock cliffs, talus slopes, sagebrush bunch grass, sparse ponderosa pine bunchgrass, rivers, open water, and hardwood slopes. The presence of cliffs with suitable roosting crevices determines species presence. Occupied sites in Washington range in elevation from 980 to 2790 feet.

References

Hayes, G. and G. J. Wiles. 2013. Washington bat conservation plan. Washington Department of Fish and Wildlife, Olympia, Washington.

Luce, R. J. and D. Keinath. 2007. Spotted bat (*Euderma maculatum*): a technical conservation assessment. USDA Forest Service, Rocky Mountain Region, Golden, Colorado.

Spotted Bat: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Develop good census techniques that will help determine population status and trends.	Conduct research and surveys to determine populations and habitat requirements.	Current insufficient	Both
2	Resource information collection needs	Lack of adequate information on threats.	As better population distribution is obtained, assess threats that may exist.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

TOWNSEND'S BIG-EARED BAT *(Corynorhinus townsendii)*

Conservation Status and Concern

This species occurs in small to moderately-sized aggregations at sites throughout the state, where it may be vulnerable to human disturbance during the breeding and wintering periods.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G4	S2S3	Low/stable	Moderate-high

Biology and Life History

Females form nursery colonies seldom exceeding 100 adults; males roost separately (apparently solitary) during this time. Nearly all adult females breed every year. Flight activity usually begins well into the night, late relative to other bats. After an initial feeding period, these bats rest at night roosts, presumably before a later feeding bout. Individuals commonly arouse in winter, changing position within a hibernaculum or moving to a nearby cave or mine. Most are lethargic at air temperatures below 62°F. This species is relatively sedentary, with no evidence of long migrations. Most recaptures occur at the banding site or usually not more than a couple miles away. Foraging movements probably rarely exceed 11 miles. Solitary males and small groups of females are known to hibernate in buildings.

Photo: W. Leonard

Distribution and Abundance

Townsend's Big-eared Bats occur at scattered locations throughout Washington. Population size is probably relatively small, but trend may be stable.

Habitat

This species inhabits lowland conifer and deciduous forests, montane conifer forest, ponderosa pine forest and woodland, riparian forest, shrub-steppe, and open fields. Maternity and hibernation colonies typically

are in caves, mine tunnels, and old buildings. Caves, tunnels, buildings and tree cavities are used as night roosts. Relatively cold places are preferred for hibernation, often near entrances and in well-ventilated areas.

References

Gruver, J. C. and D. A. Keinath. 2006. Townsend's big-eared bat (*Corynorhinus townsendii*): a technical conservation assessment. Rocky Mountain Region. USDA Forest Service, Golden, Colorado.

Hayes, G. and G. J. Wiles. 2013. Washington bat conservation plan. Washington Department of Fish and Wildlife, Olympia, Washington.

Pierson, E. D., M. C. Wackenhut, J. S. Altenbach, P. Bradley, P. Call, D. L. Genter, C. E. Harris, B. L. Keller, B. Lengus, L. Lewis, B. Luce, K. W. Navo, J. M. Perkins, S. Smith, and L. Welch. 1999. Species conservation assessment and strategy for Townsend's big-eared bat (*Corynorhinus townsendii townsendii* and *Corynorhinus townsendii pallascens*). Idaho Conservation Effort, Idaho Department of Fish and Game, Boise, Idaho.

Townsend's Big-eared Bat: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Energy development and distribution	Reclamation of abandoned mines, and vandalism and disturbance of maternity roosts and hibernacula threatens roosting aggregations.	Construct bat-friendly gates on caves and mine structures to address human safety concerns and preserve maternity and hibernacula for bats.	Current insufficient	Both
2	Agriculture and aquaculture side effects	Silvicultural practices may result in short rotation forestry that limits the development and retention of snags suitable as roosting sites and high stocking densities that diminish foraging habitat.	Implement silvicultural practices that result in development and retention of large snags in lowland and upland topographic positions and manage for more open understory conditions that mimic natural disturbance regimes in west-side and east-side forests. Provide habitat buffers for important caves.	Current insufficient	Both
3	Agriculture and aquaculture side effects	Pesticide spraying in forests and agricultural areas near roosting and foraging sites that kill moths, a major prey of this species.	Limit pesticide spraying to control outbreaks of moth pests.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

RODENTS

BRUSH PRAIRIE POCKET GOPHER (*Thomomys talpoides douglasii*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

Current status and distribution of the Brush Prairie Pocket Gopher in Washington is unknown. It is known only from southwestern Clark County, a developing urban/suburban area.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5T1T2	S2	Unknown/unknown	Low-moderate

Biology and Life History

Photo: National Park Service

This pocket gopher is a subspecies of the Northern Pocket Gopher, the species commonly found in eastern Washington. Pocket gophers are the only truly subterranean rodents in North America, and thus are rarely observed above-ground. They are herbivores that require grasses and forbs to eat, and well-drained soil for burrowing, and are generally territorial and solitary outside the reproductive season. Females produce one litter of four to six young each year. Young are born in March to June. After weaning, female offspring often establish a burrow system nearby, but male offspring disperse. Burrows include foraging tunnels and chambers for nesting and caching of food. Though territorial, burrow systems are often aggregated in favorable habitat. Pocket gophers are ecologically important as prey items and in influencing soils and plant species diversity, and their burrows are a retreat for amphibians, reptiles, and many invertebrates. Pocket gopher predators include owls, hawks, Coyotes, and Bobcats.

Distribution and Abundance

Brush Prairie Pocket Gopher distribution in Washington is limited to southwestern Clark County. Population size and trend are unknown. The lack of recent confirmed records suggests it may be extinct.

Habitat

This species inhabits open grassy areas, including pastures, prairies, savannas, and open early seral woodlands and forests. It requires well-drained soil for burrowing.

References

Johnson, R. E., and K. M. Cassidy. 1997. Mammals of Washington state: location data and modeled distributions. Washington State GAP Analysis, Volume 3. Washington Cooperative Fish and Wildlife Research Unit, Seattle, Washington.

Brush Prairie Pocket Gopher: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Lack of data on current status and distribution.	Determine population status and distribution.	Current insufficient	Both
2	Resource information collection needs	Lack of information on current threats.	If this subspecies remains extant, determine threats that may exist.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

GRAY-TAILED VOLE (*Microtus canicaudus*)

Conservation Status and Concern

Gray-tailed Voles are probably still common in pastures and grassy roadsides in Clark County, but current status and distribution is uncertain; southwestern Clark County is a developing urban/suburban area.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G4	S2	Unknown/unknown	N/A

Biology and Life History

Breeding likely takes place throughout the year. Litter size averages about 5 young. In the lab, females as young as 18 days of age were capable of mating and subsequently produced viable offspring. This species exhibits extreme population fluctuations like other members of its genus. Owls, hawks, foxes, skunks, and domestic and feral cats are common predators. Gray-tailed Voles eat a wide variety of green plants, including grasses, sedges, and forbs, such as clover, wild onions, and false dandelion. They construct intricate runway and burrow systems. Nests are built underground or above ground beneath boards, bales, and debris scattered in fields. Burrows are dug in soil or placed under fallen log debris.

Photo: J. Gervais

Distribution and Abundance

Species distribution is limited to the lower elevations of Clark County, Washington, and the Willamette Valley of Oregon. Populations can be locally abundant. Population status and trends in Clark County are unknown.

Habitat

Gray-tailed Voles occur in hayfields, pastures, fallow grassy areas, and grain fields. In Oregon, Gray-tailed Voles are associated almost exclusively with agricultural lands, especially grasses grown for seed, small grains, and permanent pastures of legumes and grasses. The species also exists along grassy highway and railroad rights-of-way.

References
Johnson, R. E., and K. M. Cassidy. 1997. Mammals of Washington state: location data and modeled distributions. Washington State GAP Analysis, Volume 3. Washington Cooperative Fish and Wildlife Research Unit, Seattle, Washington.
Verts, B. J. and L. N. Carraway. 1998. Land mammals of Oregon. University of California Press, Berkeley, California.
Verts, B. J. and L. N. Carraway. 1987. *Microtus canicaudus*. Mammalian Species 267:1-4.

Gray-tailed Vole: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Lack of data on current status and distribution.	Determine population status and distribution.	Current insufficient	Both
2	Resource information collection needs	Lack of information on current threats.	Determine threats to the population.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

KINCAID MEADOW VOLE (*Microtus pennsylvanicus kincaidi*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern
The Kincaid Meadow Vole is a unique subspecies endemic to eastern Washington. Its distribution is poorly defined and there is little current information on the status of populations.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Monitor	No	G5T3	S2	Low/unknown	Low-moderate

Taxonomic note: Specimens at the Slater Museum, University of Puget Sound, from Stevens and Pend Oreille Counties and labeled as this subspecies need to be reexamined and confirmed. A comprehensive taxonomic review of the entire species is warranted. An alternate common name is the "Potholes Meadow Vole."

Biology and Life History
This large, isolated subspecies of Meadow Vole is poorly known. Meadow Vole diet consists mainly of grasses, sedges, seeds, roots, bark, and occasionally animal matter. Kincaid Meadow Voles create distinct runways in dense cover and build a round nest of leaves and stems. Meadow Voles can be prolific. Peak breeding activity occurs April to October, but they may breed throughout the year, when snow provides an insulating layer. Litter size averages four to six. Young are weaned in 10 to 14 days and are sexually mature 2 to 3 weeks later.

Microtus pennsylvanicus Photo: J. White

Distribution and Abundance

The Kincaid Meadow Vole may be endemic to Grant and Lincoln Counties. Records exist for sites 10 miles south of Moses Lake, along Crab Creek north of Moses Lake, north to Coulee City, and east to Sylvan Lake. There are specimens of *M. pennsylvanicus* from Adams, Lincoln, and extreme northern Grant Counties that either extend the range of *M. p. kincaidi* or belong to *M. p. funebris* or possibly an undescribed subspecies, but the taxonomic affinities of these specimens have not been examined in detail. Populations may undergo cyclic fluctuations in abundance every 2 to 5 years. Current population size and trend are unknown.

Habitat

Kincaid Meadow Voles are found in damp meadows, marshy areas along creeks, and around lakes within the otherwise semi-arid Columbia Basin.

References

Booth, E. S. 1947. Systematic review of the land mammals of Washington. Ph.D. Dissertation, State College of Washington, Pullman, Washington.

Dalquest, W. W. 1948. Mammals of Washington. University of Kansas Publications, Museum of Natural History 2:1-444.

MacDonald, S. O., J. A. Cook, G. L. Kirkland, Jr, and E. Yensen. 1998. *Microtus pennsylvanicus* (Ord 1815) meadow vole. Pp. 99-100 in D. J. Hafner, E. Yensen, and G. L. Kirkland, Jr. (compilers and editors). North American rodents: status survey and conservation action plan. IUCN/SSC Rodent Specialist Group, IUCN, Gland, Switzerland and Cambridge, United Kingdom.

Kincaid Meadow Vole: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Lack of data on current status and distribution.	Determine population status and distribution.	Current insufficient	Both
2	Resource information collection needs	Lack of information on current threats.	Determine threats to the population.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

MAZAMA POCKET GOPHER (*Thomomys mazama*)

Conservation Status and Concern

Some subspecies are threatened by habitat loss from human development. Species existence is compatible with some levels of development, but high density development likely leads to extirpation.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Threatened*	Threatened	Yes	G4	S2	Low/declining	Low-moderate

*Federally threatened only in Thurston and Pierce Counties.

Taxonomic note: Recent research suggests a revision of recognized subspecies may be appropriate, but additional data are needed.

Biology and Life History

Photo: R. Gilbert

Pocket gophers are the only truly subterranean rodents in North America and are rarely observed above-ground. They are herbivores that require grasses and forbs for food and well-drained soil for burrowing. They are generally territorial and solitary outside the reproductive season. Mazama Pocket Gophers produce one litter per year, with an average litter size of five young. After weaning, female offspring often establish a burrow system nearby, but male offspring disperse. Burrows include foraging tunnels and chambers for nesting and caching of food. Though territorial, burrow systems are often aggregated in favorable habitat. Pocket gophers are ecologically important as prey items and in influencing soils and plant species diversity, and their burrows are a retreat for amphibians, reptiles, and many invertebrates. Pocket gopher predators include owls, Coyotes, and Bobcats.

Distribution and Abundance

Mazama Pocket Gophers occur in grasslands in Thurston, Pierce, and Mason Counties, and on a few alpine meadows in Olympic National Park. Washington has six described subspecies; three occur in Thurston County; and Pierce County, Mason County, and the Olympic Mountains each contain different subspecies. Two other subspecies, one near Tacoma and one in Wahkiakum County, appear to be extinct. Historically, the species was more widespread on south Puget Sound prairies, but was reduced by habitat loss caused by development, agriculture, and succession or planting of trees and shrubs. Other subspecies of Mazama Pocket Gopher occur in western Oregon and northern California. Population sizes for the different subspecies are unknown, but trends are declining for those in Thurston and Pierce Counties.

Habitat

This species occurs in grasslands, including glacial outwash prairies, pastures, subalpine meadows, and occasionally clearcuts or Christmas tree farms. Requires well-drained soil for burrowing and appears to be most abundant in loamy sand soil types. It is absent from areas with clay soil or seasonal flooding.

References

Stinson, D. W. 2013. Draft Mazama pocket gopher status update and Washington state recovery plan. Washington Department of Fish and Wildlife, Olympia, Washington.

Mazama Pocket Gopher: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Loss and fragmentation of prairie/grassland habitat.	Acquire lands and easements in strategic locations and restore habitat.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Degradation of prairie/grassland habitat.	Remove invasive trees and scotch broom from prairie/grassland areas.	Current insufficient	Both
3	Overharvesting of biological resources	Trapping by landowners and mortality by pets.	Inform local residents of gopher colonies and trapping restrictions. Promote non-lethal methods of damage control.	Current insufficient	Both
4	Resource information collection needs	Genetic and demographic effects of small population size and catastrophic events.	Determine status and conduct surveys to monitor presence and relative abundance.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

NORTHERN BOG LEMMING (*Synaptomys borealis*)

Conservation Status and Concern

The Northern Bog Lemming is known from about 12 locations in Washington, where it reaches the southwestern limit of its range. Its glacial relict habitats are isolated and patchy in nature, making the risk of extinction very high.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Petitioned	Monitor	No	G5	S3	Low/unknown	Moderate-high

Taxonomic note: Three described subspecies occur in Washington: *S. b. truei* is found west of the Cascades, *S. b. chapmani* occurs in northeastern Washington, and *S. b. artemisiae* occurs in between. The taxonomic validity of *S. b. artemisiae* may need re-evaluation.

Photo: J. Reichel

Biology and Life History

Northern Bog Lemmings primarily eat grasses and sedges, but also eat fungus, mosses, snails, slugs, and other invertebrates. In summer, they clip vegetation and create runway systems through the underbrush where they forage.

They nest underground during summer, and in winter construct globular nests of mosses, grasses, and sedges on the ground surface under the snow. Underground burrow systems may be up to one foot deep. The breeding season lasts from May through late August. Litter size ranges from two to eight young, and females may have two to three litters in a breeding season.

Distribution and Abundance

This species is found only in subarctic climates from the northern tree line south into Washington, Idaho, Montana, Minnesota, and New England. The Washington watersheds that contain known records include the Lower Pend Oreille, Middle Pend Oreille, Upper Methow, Lost River, Upper Chewuch, and Sinlahekin Creek. A recent record from Bothell, Snohomish County, needs confirmation. The status of populations of the three subspecies in Washington is unknown, but the species is considered rare throughout its range.

Habitat

Northern Bog Lemmings typically inhabit sphagnum bogs and fens, wet meadows, moist mixed and coniferous forests, alpine sedge meadows, krummholz, spruce-fir forest with dense herbaceous and mossy understory, and mossy stream sides. *S. b. artemisiae* was thought to be associated with sagebrush, but recent records suggest it is more often found in typical mossy habitats.

References

Jones, T., and L. L. Melton 2014. Petition to list the northern bog lemming (*Synaptomys borealis*) under the U. S. Endangered Species Act. Wild Earth Guardians, Denver, Colorado.

Reichel, J. D., and J. G. Corn. 1997. Northern bog lemmings: survey, population parameters, and population analysis. Unpublished report to the Kootenai National Forest, Montana Natural Heritage Program, Helena, Montana.

Yensen, E., and G. L. Kirkland. 1998. *Synaptomys borealis* (Richardson 1828): northern bog lemming. In D. J. Hafner, E. Yensen, and G. L. Kirkland, editors. North American rodents: status survey and conservation action plan. International Union for the Conservation of Nature, Gland, Switzerland.

Northern Bog Lemming: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Lack of data on current status and distribution.	Determine distribution and population status.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Habitat disturbance by road-building.	Identify and protect sites.	Current insufficient	External
3	Agriculture and aquaculture side effects	Habitat disturbance by grazing.	Identify and protect sites from unsustainable grazing.	Current insufficient	External
4	Fish and wildlife habitat loss or degradation	Potential impact of snow compaction by snowmobiles.	Investigate this potential conflict.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

OLYMPIC MARMOT (*Marmota olympus*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

Endemic to mountainous meadows of the Olympic Peninsula, Olympic Marmot populations have possibly stabilized since 2007 after declining from 2002 to 2006. Threats potentially include increased Coyote predation, and habitat fragmentation due to rising tree line (caused by declining snow pack and climate change), resulting in greater population isolation and increasing the risk of inbreeding and extinction.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G2	S2	Low/possibly stable	Moderate-high

Biology and Life History

Photo: R. Gilbert

Olympic Marmots are gregarious and form colonies ranging in size from a few to more than 40 animals. Marmots dig burrows that are used for shelter throughout the year. Diet is comprised of herbaceous plants, roots, and woody vegetation. The species hibernates without eating or drinking for seven to eight consecutive months from fall to late spring, relying on accumulated body fat and a much reduced metabolism. Olympic Marmots have a long maturation period, low rate of reproduction, and high juvenile mortality. The average age of females at first reproduction is 4.5 years. Only about 30 percent of adult females produce litters in any given year. Litters range in size from one to six pups and are born in underground burrows. Juvenile mortality during the first year is about 50 percent. Young females are fairly sedentary and rarely disperse more than a few hundred meters to establish new home ranges. Predation by Coyotes, not present prior to the 20th century, was the most common cause of mortality for adult females from 2002 to 2006.

Distribution and Abundance

Olympic Marmots are endemic to the Olympic Mountains. Localized declines and extirpations have occurred since the late 1980s, while numbers at some sites have remained stable.

Habitat

Typical habitat for Olympic Marmots encompasses subalpine and alpine meadows and talus slopes near timberline. Many colonies are located on south-facing slopes, where food availability is probably greater because of earlier snowmelt. The proximity of nearby suitable meadow habitat may be a limiting factor for colonization or recolonization of vacant habitats. Suitable meadow habitat is naturally fragmented, being distributed in discontinuous patches of varying quality and size (from 12 to more than 250 acres) across exposed mountain slopes.

References

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Griffin, S. C. 2007. Demography and ecology of a declining endemic: the Olympic Marmot. Ph.D. dissertation, University of Montana, Missoula.

Griffin, S. C., M. L. Taper, R. Hoffman, and L. S. Mills. 2008. The case of the missing marmots: are metapopulation dynamics or range-wide declines responsible? Biological Conservation 141:1293-1309.

Witczuk, J., S. Pagacz, and L. S. Mills. 2013. Disproportionate predation on endemic marmots by invasive Coyotes. Journal of Mammalogy 94:702-713.

Olympic Marmot: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Invasive and other problematic species	Predation by an expanding Coyote population has caused a decline in Olympic Marmot populations.	Control Coyotes to reduce predation on Olympic Marmots.	Current insufficient	External
2	Invasive and other problematic species	Controlling fires has favored tree survival, resulting in a gradual decline in suitable open meadow habitat for Olympic Marmots.	Continue monitoring suitable and historical Olympic Marmot habitat throughout the range and determine habitat availability over time. Assess habitat use by marmots. Model data to determine management actions.	Current insufficient	External
3	Management decision needs	Controlling fires has favored tree survival, resulting in gradual decline in suitable open meadow habitat for Olympic Marmots.	Manage fires to retain contiguous natural alpine meadow openings that benefit Olympic Marmots.	Current insufficient	External
4	Climate change and severe weather	Reduced snowpack for multiple decades has resulted in loss of habitat and a shift of Coyote occurrence to higher elevations, making Olympic Marmots more vulnerable to predation than before.	Continue monitoring marmot occupancy in suitable habitat throughout the range and determine habitat availability over time. Model data to determine needed management actions.	Current sufficient	External
5	Education needs	Visitors that feed Coyotes may increase the likelihood of Olympic Marmot predation by Coyotes.	Work with wildlife rehabilitators to stop the release of Coyotes on Olympic Peninsula.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

SHAW ISLAND TOWNSEND'S VOLE (*Microtus townsendii pugeti*)

Conservation Status and Concern

This subspecies occurs on at least 16 islands in the San Juan Archipelago. Overall population status is unclear, but populations appear secure on several larger islands. Apparent threats include habitat loss and mortality from agricultural practices.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Monitor	No	G5T1T2	S1S2	Moderate/unknown	N/A

Biology and Life History

The type specimen was collected from Neck Point, Shaw Island, Washington, in 1938. Subspecies designation was based on morphometric measurements that differ from other known subspecies of *Microtus townsendii. Microtus t. pugeti* appears smaller, with wider skull characteristics compared to other subspecies. The Shaw Island Townsend's Vole may be more closely associated with water than other subspecies of *M. townsendii*. The original taxonomic designation has not been re-evaluated. These voles live in underground burrows and open grasslands, and are primarily vegetarian. The subspecies' presence can often be recognized by travel runways that are clipped and maintained within their territories.

Microtus townsendii
Photo: National Park Service

Distribution and Abundance

The Shaw Island Townsend's Vole is found only in the San Juan Archipelago. Museum specimens from the late 1930s to the 1960s exist from Allen, Cypress, Deception, Dot, Frost, Guemes, Lopez, Orcas, Saddlebag, San Juan, Shaw, Sucia, and Turn islands in San Juan and Skagit Counties. Island residents reported voles present on Henry and McConnel islands in the late 1960s. Surveys conducted in 2012 and 2014 confirmed presence on Lopez, Orcas, San Juan, and North Finger islands, but did not detect them on Blakely, Vendovi, and Waldron islands. Recent surveys on other islands have not been conducted and status is unknown. Populations appear to be robust where they occur on Lopez, Orcas, San Juan, and North Finger Islands, but no formal population assessments have been conducted for this subspecies.

Habitat

Shaw Island Townsend's Voles have been found in fresh, brackish, and salt water marshes, under driftwood on beaches, as well as in dry fields, forests, and agricultural fields. Specific habitat requirements or limitations are unknown.

References

Hafner, D. J., E. Yensen, and G. L. Kirkland, Jr. (compilers and editors). 1998. North American rodents: status survey and conservation action plan. IUCN/SSC Rodent Specialist Group, IUCN, Gland, Switzerland and Cambridge, United Kingdom.

Shaw Island Townsend's Vole: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Conversion to agriculture and other human development. Habitat fragmentation may isolate remaining populations.	Develop better understanding of species' habitat needs and work with local planners to protect key areas from development.	Nothing current - new action needed	Both
2	Fish and wildlife habitat loss or degradation	Direct mortality occurs from agricultural practices that are unfavorable to Shaw Island Townsend's Voles.	Work with farmers to increase tolerance for voles; develop methods for compatible farming practices.	Nothing current - new action needed	Both
3	Resource information collection needs	Subspecies designation is based on morphological comparisons in the 1940s.	Need genetic assessment to determine validity of the current subspecies designation.	Nothing current - new action needed	Both
4	Resource information collection needs	Current data regarding distribution among islands and population estimates do not exist.	Conduct surveys on all likely islands, including population assessments.	Current insufficient	WDFW

NOTE: Numbers are for reference only and do not reflect priority.

TOWNSEND'S GROUND SQUIRREL (*Urocitellus townsendii*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

Population status of this Washington-endemic ground squirrel requires clarification. Significant declines have occurred in many areas, yet this species is common at a number of human-modified locations.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G3	S3	Unknown/unknown	Moderate

Biology and Life History

Photo: M. Livingston

Townsend's Ground Squirrels are a burrowing species found primarily in small to fairly large colonies, but they also occur solitarily. They are active for only 4 to 5 months, spending the rest of the year hibernating. Adults emerge from hibernation from January to February and mate soon after. Litters average about eight pups and first appear above ground in March to April. Adults and juveniles consume large amounts of food before hibernation in an effort to gain adequate fat reserves to survive through hibernation. Animals enter hibernation in May and June. Burrows provide safety from predators, shelter from bad weather, protection for raising young, and a stable environment for hibernation. Diet is broad and comprised mainly of grasses, forbs, and seeds. American Badgers, raptors, and snakes are the most important predators.

Distribution and Abundance

This species is endemic to Benton, Kittitas, Klickitat, and Yakima Counties in south-central Washington. Total population size and trend are unknown, but the species has greatly declined or become extirpated in many areas. However, it remains relatively common at some sites, including human-altered locations.

Habitat

Townsend's Ground Squirrels historically occurred primarily in native shrub-steppe, grasslands, and large patches of sagebrush at the lower edges of forest. A variety of human-modified habitats are now also occupied, including pastures, abandoned fields, orchards, vineyards, hop fields, canal banks, and sites adjacent to irrigated fields and springs. Occupied sites must have ample soil depths to provide space for burrow construction.

References

Sato, C.L. 2012. Habitat connectivity for Townsend's ground squirrel (Urocitellus townsendii) in the Columbia Plateau Ecoregion. Washington Department of Fish and Wildlife, Olympia, Washington.

Washington Department of Fish and Wildlife (WDFW). 2013. Threatened and endangered wildlife in Washington: 2012 annual report. Washington Department of Fish and Wildlife, Olympia, Washington.

Townsend's Ground Squirrel: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Adequate data on species abundance, trend, and threats are lacking.	Undertake comprehensive field surveys to determine abundance, habitat use, and threats.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Habitat loss and fragmentation due to agriculture and other development. Habitat fragmentation may isolate remaining populations.	Use landowner incentives, agreements and conservation easements to protect significant colonies. Conduct translocations to establish new populations in suitable habitat.	Current insufficient	Both
3	Invasive and other problematic species	Invasion of shrub-steppe by cheatgrass and other non-native plants has degraded habitats.	Restore and manage degraded habitat at colonies and sites chosen for translocations.	Current insufficient	Both
4	Overharvesting of biological resources	Some level of shooting and other forms of control continues despite partial legal protection.	Perform analysis to determine if this species warrants classification as protected wildlife. Conduct education and outreach to landowners and recreationists.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

WASHINGTON GROUND SQUIRREL (*Urocitellus washingtoni*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

This species is associated with shrub-steppe and steppe in eastern Washington and is threatened by a number of factors, especially habitat loss, degradation, and fragmentation.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Candidate	Candidate	Yes	G2	S2	Low/declining	Moderate

Biology and Life History

Photo: R. Finger

Washington Ground Squirrels are a burrowing species found primarily in small to fairly large colonies, but sometimes occurring solitarily. They are active for only 4 to 5 months, spending the rest of the year hibernating. Adults emerge from hibernation during mid-January to February. Mating occurs soon after emergence. Litters average five to eight pups and first appear above ground in March to April. During the two months before hibernation, adults and juveniles consume large amounts of food in an effort to gain adequate fat reserves to last through hibernation. Adults typically enter hibernation in late May and early June, but juveniles usually wait until mid to late June. Burrows provide safety from predators, shelter from bad weather, protection for raising young, and a stable environment for hibernation. Diet is broad and comprised of mainly grasses, forbs, and seeds, with at least 100 plant species eaten. Life span is relatively short, probably averaging 2 to 3 years. Badgers, raptors, and snakes are the most important predators.

Distribution and Abundance

This species is endemic to portions of the Columbia River basin in southeastern Washington and north-central Oregon. Population size is unknown, but the species has greatly declined or become extirpated in many areas.

Habitat

Shrub-steppe and native grassland habitats are preferred, especially those occurring on deep silty loam soils, which provide ample digging space for burrows. Plants frequently found in these habitats include sagebrush, native bunchgrasses, and various forbs. Where adequate food is present, highly disturbed sites may also be occupied, including degraded weedy locations, highway rights-of-way, lawns, and edges along crop fields.

References

Finger, R., G. J. Wiles, J. Tabor, and E. Cummins. 2007. Washington ground squirrel surveys in Adams, Douglas, and Grant Counties, Washington, 2004. Washington Department of Fish and Wildlife, Olympia, Washington.

USFWS. 2011. Species assessment and listing priority assignment form: *Urocitellus washingtoni*, Washington ground squirrel. U.S. Fish and Wildlife Service, Portland, Oregon.

Washington Ground Squirrel: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Habitat loss and fragmentation due to agriculture and other development. Habitat fragmentation may isolate remaining populations.	Use landowner agreements and conservation easements to protect significant colonies.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Habitat loss and fragmentation due to agriculture and other development. Habitat fragmentation may isolate remaining populations.	Conduct translocations to establish new populations in suitable habitat.	Current insufficient	Both
3	Invasive and other problematic species	Invasion of shrub-steppe by cheatgrass and other non-native plants has degraded habitats.	Restore and manage degraded habitat at colonies and sites chosen for translocations.	Current insufficient	Both
4	Overharvesting of biological resources	Some level of shooting and poisoning continues despite legal protection.	Enforce existing protective regulations. Conduct education and outreach to landowners and recreationists.	Current insufficient	Both
5	Resource information collection needs	Current distribution and causes of recent declines are not well understood.	Conduct surveys to monitor populations and trends. Conduct research to determine the causes of ongoing declines.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

WESTERN GRAY SQUIRREL (*Sciurus griseus*)

Conservation Status and Concern

The three remaining populations of this species in Washington are isolated and face a number of threats, including habitat loss and degradation, wildfires, highway mortality, and disease.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Threatened	Yes	G5	S2	Low/unknown	Low-moderate

Biology and Life History

Photo: R. Gilbert

Western Gray Squirrels are generally arboreal and solitary, but commonly forage and travel on the ground near trees. Mating occurs from January to June, with Washington litters born from March to July and averaging about three young. Pine nuts, acorns, seeds, green vegetation, hypogeous fungi (truffles and false truffles), and fruit are the main foods. The species is active year-round. In Washington, individual western gray squirrels occupy multiple nests (average = 3.5 to 14.3 nests per animal). Stick nests are mostly used for resting and sleeping, whereas cavity nests are often used by females for giving birth and rearing young. The species may compete with non-native squirrels for food and nest sites. Bobcats, Coyotes, owls, and hawks are important predators. Population density varies with food supply and occurrence of disease.

Distribution and Abundance

Western Gray Squirrels are limited to three isolated populations in Washington: Klickitat and southern Yakima Counties, western Okanogan and northern Chelan Counties, and Joint Base Lewis-McChord in Pierce and Thurston Counties. The species has experienced significant declines in abundance and distribution in the state, but current trend is unknown. Total statewide abundance may number in the low thousands.

Habitat

Habitat use varies with region of the state. The species occupies oak woodlands and conifer forests in Klickitat and Yakima Counties, low to mid-elevation conifer forests in Okanogan and Chelan Counties, and oak woodlands and conifer forests in Pierce and Thurston Counties. The North Cascades population is the only one living outside the range of Oregon white oak in Washington. Nesting frequently occurs in either large conifers (especially ponderosa pine and Douglas-fir) or oaks averaging greater than 16 inches in diameter. Most nest trees are located inside or on the edge of a forest stand and have crowns connecting with surrounding trees. Mistletoe infections are another common characteristic of nest trees.

References

Gregory, S. C., W. M. Vander Haegen, W. Y. Chang, and S. D. West. 2010. Nest site selection by western gray squirrels at their northern range terminus. Journal of Wildlife Management 74:18-25.

Linders, M. J. and D. W. Stinson. 2007. Washington state recovery plan for the western gray squirrel. Washington Department of Fish and Wildlife, Olympia, Washington.

Vander Haegen, W. M., G. R. Roth, and M. J. Linders. 2013. Survival and causes of mortality in a northern population of western gray squirrel. Journal of Wildlife Management 77:1249–1257.

Western Gray Squirrel: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Habitat loss and degradation from human development, catastrophic wild fires, logging, fire suppression, and invasion by weeds.	Work with landowners to protect habitat features favored by western gray squirrels during timber harvest, protect habitat by reducing risk of catastrophic wildfires, and undertake measures to enhance habitat.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Road mortality.	Use signing, reduced speed limits, controlled access, and possibly squirrel bridges to reduce highway mortality.	Current insufficient	Both
3	Invasive and other problematic species	Disease (e.g., mange, tularemia).	Investigate the feasibility and effectiveness of treating western gray squirrels for mange.	Nothing current - new action needed	WDFW
4	Invasive and other problematic species	Possible competition with non-native squirrels and wild turkeys.	Explore need and feasibility to control non-native squirrels. In important squirrel areas, expand turkey harvest, where appropriate, to minimize potential impacts.	Current insufficient	Both
5	Fish and wildlife habitat loss or degradation	Loss of genetic diversity and inbreeding resulting from the small sizes and isolation of populations.	Conduct translocations and enhance habitat to expand the genetic diversity and connectivity of small populations.	Current sufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

TERRESTRIAL CARNIVORES

AMERICAN BADGER (*Taxidea taxus*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

The status of American Badgers in Washington is poorly understood due to a lack of survey effort and the small amount of occurrence data available to indicate its current distribution.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5	S4	Unknown/unknown	Low-moderate

Biology and Life History

The American Badger is a mid-sized (10 to 11 pounds), fossorial mammal of the weasel family (Mustelidae) that uses underground burrows for resting, denning, and prey caching. They also forage underground by digging into the burrow systems of prey species, which commonly include ground squirrels, prairie dogs, marmots, and pocket gophers. Badgers also feed on carrion, insects, reptiles, and birds. Burrows excavated by American Badgers are used by other bird and mammal species. They are largely solitary. They use large home ranges that may overlap with other American Badgers of either sex. Gray Wolves, Coyotes, bears, and Cougars are reported predators of American Badgers; however for many populations, anthropogenic causes (i.e., vehicle collisions, illegal shooting, and trapping) appear to be a more significant source of mortality.

Photo: National Park Service

Distribution and Abundance

The current distribution of American Badgers includes portions of eastern Washington from the eastern Cascade foothills to the Idaho border. Population size in the state is unknown, but there is concern that the statewide population is declining. The American Badger is classified as a furbearing species in Washington; however, few captures have been reported since 1995.

Habitat

American Badgers are generally found in grassland, shrub-steppe, desert, dry forest, parkland, and agricultural areas. They require soils that allow the excavation of den sites and support fossorial prey species (e.g., ground squirrels).

References

Lindzey, F. G. 2003. Badger (*Taxidea taxus*). Pages 683-691 in G. A. Feldhamer, B. C. Thompson, and J. A. Chapman, editors. Wild mammals of North America: biology, management and conservation, 2nd edition. Johns Hopkins University Press, Baltimore, Maryland.

Rahme, A. H., A. S. Harestad, and F. L. Bunnell. 1995. Status of the badger in British Columbia. Wildlife Working Report WR-72, Ministry of Environment, Lands and Parks (Wildlife Branch), Victoria, British Columbia.

American Badger: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Adequate data on species abundance, trend, and threats are lacking.	Undertake comprehensive field surveys to determine abundance, habitat use, and threats.	Current insufficient	Both
2	Fish and wildlife habitat loss or degradation	Habitat loss and fragmentation from agriculture and other development.	Conduct research and modeling of habitat using findings of habitat associations from badger surveys. Use these findings to prevent further loss and decline of habitat.	Current insufficient	Both
3	Overharvesting of biological resources	Illegal killing and persecution.	Enforce existing protective regulations. Conduct education and outreach to landowners and recreationists.	Current insufficient	Both
4	Overharvesting of biological resources	Lack of adequate prey availability may limit badger abundance in some areas.	Work to restore populations of ground squirrels and other prey species.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

CASCADE RED FOX (*Vulpes vulpes cascadensis*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

Little information is available on the distribution and status of this fox in Washington, although recent surveys suggest that populations are likely to be small and may be isolated. Climate change could reduce the availability of habitat for this species.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G5T1T2	S1	Unknown/unknown	High

Biology and Life History

The Cascade Red Fox is a subspecies of Red Fox that occurs only in the montane environments of the Cascade Range in Washington. Individuals commonly occur in three color phases: red, cross, and silver/black. All three phases have been reported within a single litter of pups. They are prey generalists and prey upon a variety of small and mid-sized mammals, insects, fruits, birds, and carrion. Pocket gophers, voles, and Snowshoe Hares are the most common mammalian prey. Coyotes, Bobcats, Gray Wolves, Cougars, Lynx, and dogs are predators of Cascade Red Foxes. Seasonal home ranges for this species vary in size from 1 to 4 square miles.

Photo: M. Reid

Distribution and Abundance

The subspecies is confined to high elevations in the Cascades. Based on surveys and observations since 2005, there are concentrations of recent verifiable detections in the southern Cascades in the vicinity of Mt. Adams, Indian Heaven Wilderness Area, Goat Rocks Wilderness Area, and Mt. Rainer National Park. Similar surveys have not been conducted in the northern Cascades, and fewer verifiable detections are available from that area. Overall population size and trend are unknown. Available evidence suggests that some populations may be small and/or isolated.

Habitat

Subalpine meadows, parklands, and open forests are primary habitats occupied by Cascade Red Foxes. They avoid wet, dense forests of the westside Cascades and tend to prefer the drier mid-elevation eastside forests of grand fir, Douglas-fir, and ponderosa pine.

References

Akins, J. 2014. Cascades carnivore project: 2014 spring progress report. http://cascadescarnivoreproject.blogspot.com/

Aubry, K. B. 1983. The Cascade red fox: distribution, morphology, zoogeography and ecology. Dissertation, University of Washington, Seattle, Washington.

Sacks, B. N., M. J, Statham, J. D. Perrine, S. M. Wisely, and K. A. Aubry. 2010. North American montane red foxes: expansion, fragmentation, and the origin of the Sacramento Valley red fox. Conservation Genetics 11:1523-1539.

Cascade Red Fox: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Basic information is needed on distribution, abundance, and threats.	Undertake comprehensive field surveys to determine abundance, habitat use, and threats.	Current insufficient	Both
2	Resource information collection needs	Habituation to people occurs at Mt. Rainier National Park.	Determine whether habituation is a problem for the species, visitors, and the National Park Service at the park.	Current insufficient	External
3	Climate change	Climate change may represent a threat from loss of higher elevation meadows and parklands.	Research is needed to better determine distribution and habitat associations. Results may allow further assessment of the impacts of climate change.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

FISHER (*Pekania pennanti*)

Conservation Status and Concern

Historical over-trapping, incidental mortality, and habitat loss and fragmentation caused the extirpation of Fishers in Washington by the mid-1900s. A reintroduction project to recover the species on the Olympic Peninsula was completed in 2010. A Cascades Fisher reintroduction is scheduled to begin in 2015.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Proposed Threatened	Endangered	Yes	G5T2T3Q	SH	Unknown/unknown	Moderate-high

Biology and Life History

Photo: J. Jacobson

Fishers are a mid-sized carnivore (4.4 to 13 pounds) in the weasel family (Mustelidae) that use forested habitats. They commonly prey upon small and mid-sized mammals, such as Snowshoe Hares, squirrels, mice, and voles. They also feed on ungulate carrion, fruit, insects, and birds. Fishers are known for their ability to prey upon porcupines. Trapping, vehicle collisions, and predation by Bobcats, Coyotes, and Cougars are common sources of mortality. Females give birth when they are 2 years of age or older, and litter sizes range from one to four kits. Fishers use uncharacteristically large home ranges for an animal of their size (average sizes are more

than 19 square miles in northern portions of its range), with male home ranges typically being twice as large as those of females. Large trees, large snags, and large logs with cavities are important habitat features and are commonly used as rest sites and den sites.

Distribution and Abundance

Fishers occur only in the boreal and temperate forests of North America. They once occurred throughout the forested areas of western, northeastern, and southeastern Washington, but were extirpated from the state by the mid-1900s, mainly as a result of over-trapping. Ninety Fishers were reintroduced to the Olympic Peninsula from 2008 to 2010 as the first step in Fisher recovery in Washington, and surveys in 2013 and 2014 indicate that reintroduced Fishers are now reproducing and are widely distributed on the Olympic Peninsula. Population size and trend are unknown, but are currently under investigation.

Habitat

Fishers inhabit coniferous and mixed coniferous-deciduous forests and they tend to avoid areas with significant human activity and developed areas. Home ranges are commonly characterized by a mosaic of forest stand ages in low to mid-elevation forest landscapes, and these mosaics tend to be dominated by forests with mid-sized to large diameter trees. Fishers are consistently associated with forests that provide moderate to high canopy closure and the presence of large woody structures such as cavity trees, snags and logs.

References

Hayes, G. E. and J. C. Lewis. 2006. Washington state recovery plan for the fisher. Washington Department of Fish and Wildlife, Olympia, Washington.

Lofroth, E. C., C. M. Raley, J. M. Higley, R. L. Truex, J. S. Yaeger, J. C. Lewis, et al. 2010. Conservation of fishers (*Martes pennanti*) in south-central British Columbia, western Washington, western Oregon, and California–Volume I: conservation assessment. USDI Bureau of Land Management, Denver, Colorado.

Fisher: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Overharvesting of biological resources	Incidental trapping capture, highway mortality, and other mortality sources pose a risk for the reintroduced population on the Olympic Peninsula.	Continue to monitor this population to determine reintroduction success.	Current sufficient	Both
2	Management decision needs	Historical extirpation/absence of fishers in the Cascades Recovery Area, which makes up a major portion of the Fisher's historical range in Washington.	Work with officials in British Columbia to procure fishers and conduct reintroductions in the southern and northern Cascades.	Current sufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

GRAY WOLF (*Canis lupus*)

Conservation Status and Concern

Gray Wolves were once common throughout most of Washington, but human persecution led to their extirpation from the state by the 1930s. Wolves have started to recover in recent years, with pack numbers increasing from one in 2008 to 16 in 2014. Human-related mortality is the greatest threat to the population.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered*	Endangered	Yes	G4	S1	Low/increasing	Low-moderate

*Federally listed only in the western two-thirds of Washington.

Biology and Life History

Photo: USFWS

Gray Wolves are highly social and form packs consisting of a breeding male and female, pups from the current year and previous years, and sometimes other individuals. Typical pack size in the northern U.S. Rockies is five to 10 animals. Packs defend territories that generally average 193 to 386 square miles. One litter usually numbering four to six pups born each year in April. Wolves are carnivores and feed primarily on hoofed mammals. Elk, deer, and moose are the main prey in western North America, with other ungulates (e.g., bison, bighorn sheep, caribou), beavers, and smaller animals eaten to a lesser extent. Wolves are also natural scavengers and readily feed on the carcasses of dead animals. As top-level predators, Gray Wolves influence the abundance and behavior of their prey and other predators, which in turn can affect vegetation patterns, occurrence of other wildlife, and other ecological processes. About 10 to 15 percent of the members of a population are comprised of younger solitary animals dispersing from their natal pack to seek a mate, vacant habitat, or another pack to join. Dispersal distances average 37 to 62 miles but occasionally exceed 180 miles.

Distribution and Abundance

As of December 31, 2014, Washington's wolf population numbered at least 68 individuals in 16 known packs, including five breeding pairs. Pack territories were predominately located in northeastern Washington (12 of 16 packs), with three packs also present in the northern Cascade Mountains and one pack in the Blue Mountains. No packs have yet been confirmed in the southern Cascades or in western Washington.

Habitat

Wolves are habitat generalists and can thrive in almost any habitat (i.e., forests, prairies, swamps, mountains, deserts, and tundra) with sufficient prey and limited human-caused mortality. In western North America, the species is generally found in forests and nearby open habitats characterized by lower elevations and gentle terrain, especially during winter.

References

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Gray Wolf: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Overharvesting of biological resources	Lack of correct information on biology of Gray Wolves among the public can result in misimpressions about Gray Wolves and illegal killing.	More accurate knowledge of Gray Wolves is needed among conservationists, landowners, livestock owners, hunters, and the general public. Improved public knowledge could reduce illegal killing of Gray Wolves.	Current insufficient	Both
2	Coordination/ administration needs	Human-wolf conflict resulting from livestock depredations.	Expand use of non-lethal techniques and control measures to deter livestock depredation.	Current insufficient	Both
3	Overharvesting of biological resources	Illegal killing and persecution.	Expand available resources for law enforcement. Enforce and prosecute wolf poaching.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

GRIZZLY BEAR (*Ursus arctos*)

Conservation Status and Concern

This omnivore is extirpated from most of the state; however, two populations of uncertain viability have been identified and each plays an important role in the range-wide conservation and recovery of the species. Grizzly populations in Washington are very small and isolated due to habitat fragmentation caused by human settlement and highways, which makes the species more vulnerable to inbreeding, wildfire, illegal harvest and other threats.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Threatened	Endangered	Yes	G4T3T4	S1	Critical/unknown	Moderate

Biology and Life History

Photo: National Park Service

Grizzly Bears can be distinguished from black bears by longer, curved claws, humped shoulders, and a face that appears concave. They are long-lived and can reach 25 years of age. Breeding occurs in late spring and early summer. Litter size is one to four, with an average of two cubs. Young are born in winter and typically remain with the mother through two winters. Although adult Grizzly Bears are normally solitary, home ranges frequently overlap and they are not considered territorial. They are wide-ranging but may congregate in areas with abundant food. Grizzly Bears are opportunistic omnivores with high diet variability among individuals, seasons, and years. They generally enter dens in October or November for 4 to 6 months of hibernation.

Distribution and Abundance

Grizzly Bears once occurred in most of Washington, but are now restricted to remote areas of the Selkirk Mountains, the North Cascades, and certain places near the northern border of Washington between these two ecosystems. These areas probably support the best remaining "seclusion" habitat in the state. Washington's total Grizzly Bear population is small (perhaps 0 to 20 animals on a year-round basis), and is likely the periphery or periodic expansion area from populations in British Columbia and Idaho. Trends in the North Cascades and Selkirk populations are unknown. Grizzlies have not been documented in the North Cascades since October 2010.

Habitat

The species is now found mostly in arctic tundra, alpine tundra, and subalpine mountain forests, but once occurred in a wider variety of habitats including open prairie, brushlands, riparian woodlands, and semi-desert scrub. Most populations require huge areas of habitat remote from most human activity. Grizzly bears are common only where food is abundant and concentrated (e.g., salmon runs, caribou calving grounds). Hibernation dens are usually on steep north-facing slopes where snow accumulates. Young are born in a den, cave, crevice, hollow tree, hollow dug under rock, or similar site.

References

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Grizzly Bear: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Management decision needs	Washington law (RCW 77.12.035), other species conflict and conservation issues and other challenges exist in WDFW's participation in Grizzly Bear recovery activities.	Participation in the Interagency Grizzly Bear Committee, in the North Cascades environmental impact statement process, and in recovery activities in the Selkirks.	Current sufficient	Both
2	Education and outreach	Negative Grizzly Bear/human interactions and the perceived threat of dangerous encounters impact the public's willingness to have Grizzly Bears on the landscape.	Implement human safety and other education programs identified in existing recovery and management plans, including implementation of sanitation and food storage actions, and regulations to prevent human-bear conflicts.	Current insufficient	Both
3	Education and outreach	Mortality from hunters mistaking Grizzly Bears for Black Bears.	Continue efforts to educate Black Bear hunters about recognition of Grizzly Bears.	Current sufficient	Both
4	Resource information collection needs	Uncertainty of the current status and future viability of the small Grizzly Bear populations in WA.	Continue periodic assessment of occurrences in the North Cascades and Selkirks using hair snares and other methodology.	Current insufficient	External
5	Habitat loss or degradation	Small sizes and isolation of populations result in part from habitat fragmentation caused by human settlement and highways, leading to increased risk of inbreeding within populations.	Use landowner agreements, conservation easements, and land acquisitions to protect dispersal habitats from development. Engage in local and state planning for roads and other large infrastructure.	Current insufficient	WDFW
6	Habitat loss or degradation	Increased future catastrophic forest fires could reduce habitat availability in WA.	Increase practices that promote healthy forests and expand fire management activities to protect large areas of contiguous habitat.	Current insufficient	WDFW

NOTE: Numbers are for reference only and do not reflect priority.

LYNX (*Lynx canadensis*)

Conservation Status and Concern

Washington's Lynx population is small (likely less than 100 animals) and restricted to a small portion of its historical range. Small population size, habitat loss from large wildfires, and climate change are threats to Lynx in Washington.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Threatened	Threatened	Yes	G5	S1	Low/declining	High

Biology and Life History

The Lynx is a mid-sized member (11 to 38 pounds) of the cat family (Felidae) that occurs only in the boreal forests of North America. Lynx are prey specialists because snowshoe hares make up the bulk of their diet; they are physically adapted to foraging for Snowshoe Hares in deep snow. The size of northern Lynx populations cycles every 8 to 11 years in response to the population cycles of Snowshoe Hares. Cycling of this type does not occur or is less pronounced in southern populations, including the one in Washington.

Photo: WDFW

Distribution and Abundance

Lynx once occurred throughout the northern counties of Washington but are now largely restricted to a single area that encompasses western Okanogan, northern Chelan, and eastern Whatcom and Skagit Counties. The size of the Lynx population in this area was estimated at approximately 87 animals in the early 2000s, but this estimate was based on the extent of habitat prior to the large Tripod fire that substantially reduced Lynx habitat in Okanogan County in 2006. This loss of habitat has likely caused Washington's Lynx population to decline over the last 10 years. Maintenance of the state's population is likely dependent upon demographic support from neighboring populations in British Columbia and Alberta.

Habitat

Lynx occupy subalpine and boreal coniferous forests that have substantial accumulations of snow during the late fall, winter, and early spring. In Washington, Lynx habitat includes Engelmann spruce and subalpine forests higher than 4600 feet in elevation. Lynx typically hunt for snowshoe hares in early successional forest, where hares are most abundant. Females commonly use mature forest stands for denning and their den sites are often located in tangled piles of fallen trees.

References

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Lynx: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Lynx habitat in existing Lynx management zones is threatened by major wildfires that can make conditions unsuitable for Lynx over large areas.	Protect mid- and late seral forest habitats until younger forests become suitable foraging habitats.	Current insufficient	External
2	Resource information collection needs	Threat of small population size, population isolation, and lack of immigration.	Assessment of population's genetic characteristics to determine the extent that immigration from British Columbia is essential for population persistence. Population modeling of carrying capacity of existing Lynx management zones.	Current sufficient	Both
3	Fish and wildlife habitat loss or degradation	Declining habitat connectivity may inhibit movements between Washington and British Columbia.	Maintain landscape connectivity to facilitate immigration into Washington. Work with authorities in British Columbia to help achieve this goal.	Current insufficient	Both
4	Resource information collection needs	Inadequate information on population size and trend.	Conduct population monitoring to determine changes in population size and trend.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

PACIFIC MARTEN – COASTAL POPULATION (*Martes caurina caurina*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

Recent detections in 2015 in Olympic National Park indicate that one or more Pacific Marten coastal populations still exist on the Olympic Peninsula. Given the small number of verifiable detections in the last 20 years, populations are likely to be small, isolated and may be limited to high elevation habitat where surveys are limited by accessibility. Historical trapping, loss and fragmentation of late-successional forests at low elevations, and small population size are likely factors that contributed to the decline of the species in Washington.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	Yes	GNR	SH	Critical/unknown	Moderate-high

Biology and Life History

Pacific Martens are a small to mid-sized (0.9 to 3.3 pounds) forest carnivore in the weasel family. Pacific Martens are terrestrial, arboreal, and forage in and underneath the snow. They are prey generalists and feed on a variety of small mammals, birds, insects, carrion, and berries. Bobcats, Coyotes, raptors, and Fishers are predators of martens; however, trapping is the largest source of mortality for many populations. This species uses cavities in large woody structures (e.g., live trees, snags, logs, log piles, stumps) and talus for resting and denning. Despite their small size, they use relatively large home ranges (0.8 to 10.5 square miles).

Photo: WDFW

Distribution and Abundance

The distribution of Pacific Martens in Washington historically included the Olympic Peninsula and southwestern portion of the state. Two detections in high elevation habitats in Olympic National Park in 2015 (in the upper Hoh Valley and at Mt. Cruiser) indicate that one or more Pacific Marten coastal populations still exist on the Olympic Peninsula. They were previously detected in 2008 and 1990 in the eastern part of Olympic National Forest. The limited number of detections indicates that the Pacific Marten coastal population is likely to be very small and its trend unknown.

Habitat

American Martens occur in boreal forest and taiga ecosystems, as well as mid- and high-elevation forests in mountainous regions at more southern latitudes. The coastal and Humboldt martens are the exceptions to this, as they use lower elevation forests. Anecdotal information suggests that Pacific Martens on the Olympic Peninsula used late-successional conifer forests at low and mid-elevations (e.g., cedar forests on the west side of the peninsula). The association with these forests likely placed coastal the species at greater risk to trapping and the loss and fragmentation of habitat due to extensive road-building and logging.

References

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Pacific Marten: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
	Resource information collection needs	There is a lack of adequate information on the current status and distribution of this population.	Initiate surveys to detect Pacific Martens in both coastal forests and high elevation forests on the Olympic Peninsula. Although ongoing Fisher surveys recently detected one Pacific Marten in Olympic National Park, these surveys sample only some high elevation habitats where Pacific Martens could occur in the Park and Olympic National Forest.	Currently insufficient	External

WESTERN SPOTTED SKUNK (*Spilogale gracilis*)

Conservation Status and Concern

There is inadequate information on the current status and distribution of this species in much of its range in western and southeastern Washington. The increased occurrence of Opossums and loss and fragmentation of forest habitats due to urban and agricultural development may explain the apparent substantial decline of verified occurrences in the Puget Trough since the 1970s.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5	S4	Unknown/declining in Puget Trough	Low

Biology and Life History

The Western Spotted Skunk is a small to mid-sized member of the skunk family (Mephitidae) and the smallest of the four North American skunks (1 to 4 pounds). This species is nocturnally active. The bulk of the diet is made up of small mammals and insects, but this omnivore will also eat carrion, berries, fruit, birds, bird eggs, reptiles, and amphibians. Great Horned Owls, Bobcats, and domestic dogs and cats are documented predators of Western Spotted Skunks. Anthropogenic causes (i.e., vehicle collisions, trapping, and pest control) may be the prevalent sources of mortality in many populations.

Photo: Wikimedia Commons

Distribution and Abundance

The range of Western Spotted Skunks includes much of western Washington from the western Cascade foothills to the coast; they also occur in the Blue Mountains in southeastern Washington. Population size in the Puget Trough is unknown, but the few recent reports suggest a substantial population decline has occurred there. Data from numerous recent carnivore surveys on the Olympic Peninsula indicate that Western Spotted Skunks continue to be widespread and common there. Current status and trend in southeastern Washington are also poorly known.

Habitat

Western Spotted Skunks are associated with habitats that have dense ground cover, dense understory vegetation, burrows of other species, rocky outcrops, and woody structures (e.g., logs, snags, stumps, log and brush piles). These features are important as resting, denning and foraging sites and are found in a variety of land cover types including conifer forests, riparian areas, thickets and brushy habitats, and farmlands. Western Spotted Skunks generally occur from sea level to 1970 feet in elevation in the Olympics and occasionally up to 2950 feet in the Cascades. In southeastern Washington, this species uses rocky outcrops, brushy habitats, and riparian areas up to 1970 feet in elevation.

References

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Rosatte, R. and S. Lariviere. 2003. Skunks. Pages 692-707 in G. A. Feldhamer, B. C. Thompson, and J. A. Chapman, editors. Wild mammals of North America: biology, management and conservation, 2nd edition. Johns Hopkins University Press, Baltimore, Maryland.

Verts, B. J., L. N. Carraway, and A. Kinlaw. 2001. *Spilogale gracilis*. Mammalian Species 674: 1-10.

Western Spotted Skunk: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Basic information on distribution and abundance is lacking for this species in much of western and southeastern Washington.	Initiate population and trend surveys in the Puget Trough and southeastern Washington.	Current insufficient	Both
2	Resource information collection needs	Basic information on threats is lacking for this species in much of western and southeastern Washington.	Initiate research to determine threats in the Puget Trough and southeastern Washington.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

WOLVERINE (*Gulo gulo*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

Washington's Wolverine population is small, largely restricted to the North Cascades, and is an extension of a larger population in southern British Columbia. Climate change is considered a likely threat to the species in Washington.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Candidate	Yes	G4	S1	Critical/stable	Moderate-high

Biology and Life History

The Wolverine is a wide-ranging carnivore and the largest terrestrial member of the weasel (Mustelidae) family. It occurs in remote, mountainous areas in Washington and avoids humans and developed areas. Wolverines are prey generalists and commonly feed on small and mid-sized mammals and ungulate carrion, and may opportunistically kill adult ungulates. For an animal of their size (18 to 33 pounds in Washington), Wolverines use very large activity areas (i.e., 77 to 770 square miles). Anthropogenic sources (e.g., trapping, hunting) appear to be the most significant causes of Wolverine mortality. Predators include Gray Wolves, Cougars, and other Wolverines.

Photo: J. Heinlen

Distribution and Abundance

Wolverines occur in the remote mountainous areas of the Cascades and in northeastern Washington. A population of 13 Wolverines has been studied in the North Cascades from 2005 to 2013. Wolverines have recently been detected near Mt. Adams and in the Goat Rocks Wilderness in the South Cascades, but the existence of a breeding population in that region has not yet been determined. The statewide population is probably less than 20 animals, but appears to be relatively stable.

Habitat

Wolverines commonly occur in boreal forest, taiga, and tundra ecosystems. In Washington, they occupy alpine and subalpine-forest habitats, especially within North Cascades National Park and the wilderness areas of Okanogan-Wenatchee National Forest. Denning sites are commonly located in north and northeastern facing cirque habitats. Dens are typically associated with a passage through deep snow to a space within talus or under a fallen tree(s) or other large woody debris.

References

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Wolverine: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Information on abundance, distribution, movements, and reproduction is lacking for the central and southern Cascades, and northeastern Washington.	Initiate or extend current monitoring activities into the central Cascades (especially north and south of the I-90 corridor) and the southern Cascades. Surveys in northeastern Washington would also be valuable.	Current insufficient	Both
2	Habitat loss or fragmentation	Barriers or impediments to movement across Interstate 90 in the central Washington Cascades may impede demographic support from north to south and may have prevented the establishment of a breeding population in the south Cascades.	Continue surveys specifically to detect wolverine passage, and continue development of passage structures and habitat corridors to facilitate successful crossings.	Current insufficient	Both
3	Climate change and severe weather	Loss of denning habitat and foraging habitat due to climate change.	Improve or maintain access to unoccupied denning and foraging habitat in the south Cascades (as identified in item 2 above).	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

MARINE MAMMALS

BLUE WHALE (*Balaenoptera musculus*)

Conservation Status and Concern

The stock along the U.S. west coast, which includes Washington, is estimated at 1,647 whales and has a stable trend. Ship strikes and fisheries entanglements may negatively affect recovery.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	Yes	G3G4	SNA	Critical/stable	Low-moderate

Biology and Life History

Photo: NOAA

The largest of the baleen whales, most Blue Whales migrate between summer and winter ranges, but some individuals appear to remain in certain areas year-round. Poleward movements in spring allow the whales to travel to areas with high summer and fall production of krill, their primary food. Up to 8,000 pounds of krill can be consumed in a day. Animals return to lower latitudes in winter, where most reproductive activity takes place, including births and mating. Average calving interval is probably two to three years. Age of sexual maturity is thought to be 5 to 15 years. Life span is estimated to be at least 80 years. Blue Whales do not form close social groups, but typically occur alone or in pairs.

Distribution and Abundance

Distribution covers the world's oceans from the tropics to higher latitudes. Total global population is estimated at perhaps only 5,000 whales. Individuals occurring off Washington belong to the Eastern North Pacific Stock, which feeds during summer and fall off the U. S. west coast (especially California) and to a lesser extent off British Columbia and in the Gulf of Alaska and central North Pacific. Wintering occurs off Mexico and Central America. The stock currently holds an estimated 1,647 whales, which is about one-third of its estimated pre-whaling size, and appears to have maintained a stable population trend since the 1990s. Blue Whales regularly occurred off the Washington coast prior to and during the whaling era. Sightings are rare now, with just three in the last 50 years, including six animals seen in December 2011. This species does not enter the state's inner waters.

Habitat

Blue Whales are more pelagic than most other whales, but also visit coastal waters. Occurrence is linked to areas of high zooplankton abundance.

References

Calambokidis, J. 2013. Updated abundance estimates of blue and humpback whales off the US west coast incorporating photo-identifications from 2010 and 2011. Document PSRG-2013-13 presented to the Pacific Scientific Review Group, April 2013.

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National Oceanic and Atmospheric Administration (NOAA) Fisheries Office of Protected Resources. http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/bluewhale.htm

Blue Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Overharvesting of biological resources	Ship strikes are a source of mortality and injury.	Identify areas of greatest concern for ship strikes and work with the shipping industry to reduce this threat.	Current insufficient	External
2	Overharvesting of biological resources	Entanglement in fisheries gear (netting, pots, and traps) is a cause of mortality and injury off the U.S. west coast.	Determine ongoing sources of bycatch and manage those fisheries to reduce bycatch.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

FIN WHALE (*Balaenoptera physalus*)

Conservation Status and Concern

The stock along the U.S. west coast, which includes Washington, is estimated at about 3,000 whales and is either increasing or stable. Ship strikes and fisheries entanglements may hinder recovery.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	No	G3G4	SNA	Low/increasing	Low-moderate

Biology and Life History

Photo: NOAA

Fin Whales are large baleen whales that usually occur alone or in groups of two to seven individuals. They regularly associate with other species of large whales and dolphins when feeding. This species commonly migrates between higher latitude waters during summer and lower latitude waters during winter, but animals in some areas (e.g., California) may be present year-round. Feeding occurs only in summer, when large amounts of krill are consumed. Small schooling forage fish and squid are also eaten. Mating and births of calves occur in winter. Adult females bear one young every two to three years. Sexual maturity is achieved at 6 to 12 years of age and life span can reach 80 to 90 years.

Distribution and Abundance

Distribution encompasses the world's oceans from the tropics to higher latitudes. Populations in the North Pacific are estimated to have once numbered 42,000 to 45,000 whales, but were reduced to estimated 13,000 to 18,700 animals during the whaling era. Fin Whales in Washington are part of the California/Oregon/Washington Stock, which was estimated to contain 3,044 whales in 2008. Stock trend is increasing or stable. Abundance off Washington and Oregon combined was estimated at 280 to 380 individuals from 1996 to 2001. Sightings and acoustic detections indicate this species is present off Oregon and Washington for most of the year. Observations of Fin Whales in the Salish Sea are very rare.

Habitat

This species usually inhabits deep offshore waters and the outer slopes of continental shelves. Temperate and subpolar regions are preferred.

References

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NOAA Fisheries Office of Protected Resources. http://www.nmfs.noaa.gov/pr/species/mammals/cetaceans/finwhale.htm

Fin Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Overharvesting of biological resources	Ship strikes are a relatively important source of mortality and injury off the U.S. west coast.	Identify areas of greatest concern for ship strikes and work with the shipping industry to reduce this threat.	Current insufficient	External
2	Overharvesting of biological resources	Entanglement in fisheries gear (netting, pots, and traps) is a cause of mortality and injury off the U.S. west coast.	Determine ongoing sources of bycatch and manage those fisheries to reduce bycatch.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

GRAY WHALE (*Eschrichtius robustus*)

Conservation Status and Concern

The eastern North Pacific stock of this whale has recovered from overharvest and has been stable for several decades. Status of a small group within this stock, the Pacific Coast Feeding Group, whose range includes Washington, requires further assessment.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	Sensitive	Yes	G4	SNA	Medium/stable	Low-moderate

Biology and Life History

The eastern North Pacific stock of this large baleen whale annually migrates 11,200 miles, roundtrip, between its summer range off Alaska and Siberia and its winter range in Mexico. Whales travel north from February to June and return south from October to January. Southward migration is more concentrated and closer to shore than is northward migration. Females are impregnated during southward migration or near the calving grounds. Gestation lasts about 13.5 months. A single calf is born in late December to early February. The calving interval is usually 2 years. Individuals become sexually mature at 5 to 11 years of age. Diet consists of small invertebrates obtained from the sea bottom in shallow waters.

Photo: R. LeValley

Distribution and Abundance

Year-round distribution of the Eastern North Pacific stock extends from the Bering and Chukchi seas southward to Baja California, Sonora, and Sinaloa in Mexico. A few individuals visit Puget Sound annually. Over the past several decades, stock numbers have recovered to levels near pre-whaling abundance. The most recent minimum population estimate is about 18,000 whales based on data from 2006 to 2007. Despite high levels of mortality in 1999 and 2000, the population has fluctuated around its average carrying capacity for the last 30 years. A small subpopulation, known as the Pacific Coast Feeding Group, numbers about 200 whales and summers between southeastern Alaska and northern California, including Washington. Recent genetic data suggest this group is somewhat distinct from the main stock, but that some interbreeding occurs between the two groups.

Habitat

Gray Whales forage and migrate mostly in continental shelf and coastal waters. Young are born in lagoons and bays.

References

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Gray Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Resource information collection needs	Better assessment of the status of the Pacific Coast Feeding Group is needed.	Determine the status of the Pacific Coast Feeding Group in Washington waters.	Current insufficient	External
2	Resource information collection needs	Gray Whales regularly strand in Washington.	Necropsies of stranded individuals should continue to monitor causes of death, animal condition, and physical health of the stock.	Current insufficient	Both
4	Energy development and distribution	Large oil spills could harm Gray Whale populations through negative impacts to health.	Minimize the risk of oil spills in Washington and elsewhere along the west coast of North America.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

HUMPBACK WHALE (*Megaptera novaeangliae*)

Conservation Status and Concern

Abundance of this species along the U.S. west coast, including Washington, has steadily grown in recent decades. Entanglements in fishing gear and ship strikes are relatively minor sources of mortality and injury.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	Yes	G4	SNA	Low/increasing	Low-moderate

Biology and Life History

Photo: R. LeValley

This large baleen whale is highly migratory, with most populations moving long distances from tropical and subtropical wintering areas to higher latitudes in the summer. Individuals show strong site fidelity to summering and wintering areas. Animals from multiple summering areas converge on common wintering areas. Most of the summer is spent feeding and accumulating fat deposits. Prey mainly include small schooling fishes and krill, which are caught at the surface or while submerged. Humpback Whales bear young and mate at wintering grounds, but do not feed. Mating behavior includes aggressive displays and long vocalizations known as singing. Gestation lasts 11 to 12 months. Most adult females bear a calf every 2 to 3 years. Humpback whales travel alone or in small groups of up to 10 to 15 whales. Most humpbacks occur off Washington from July to September.

Distribution and Abundance

Distribution encompasses the world's oceans from the tropics to higher latitudes. Numbers in the North Pacific increased from about 1,200 to 1,400 whales in 1966 (following severe overharvest) to about 21,000 whales by 2004 to 2006. Humpback whales feeding along the U.S. west coast belong to the California/Oregon/Washington Stock, which is comprised of a California/Oregon feeding group and a Washington/southern British Columbia feeding group. This stock mainly winters in coastal areas off Mexico and Central America, although some members from the Washington/southern British Columbia feeding group winter in Hawaii. The stock has a long-term growth rate of about 7.5 percent per year and held an estimated 1,918 whales in 2007 to 2008, including about 189 whales in the Washington/southern British Columbia feeding group. Humpback Whales were common in the Salish Sea until the early 1900s, but were decimated by hunting and remain rare visitors.

Habitat

Habitat includes the open ocean and coastal waters, with inshore areas such as bays sometimes used. Feeding grounds are usually located in cold, productive coastal waters. Calving areas occur in shallow waters near coasts or islands.

References

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Humpback Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Overharvesting of biological resources	Entanglement in fisheries gear (netting, pots, traps) remains a cause of mortality and injury to Humpback Whales off the U.S. west coast.	Determine ongoing sources of bycatch and manage those fisheries to reduce bycatch.	Current insufficient	External
2	Overharvesting of biological resources	Ship strikes are another source of mortality and injury.	Identify areas of greatest concern for ship strikes and work with the shipping industry to reduce this threat.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

KILLER WHALE (*Orcinus orca*)

Conservation Status and Concern

Of the three main populations occurring in Washington, southern resident Killer Whales have shown an overall decline since 1995, whereas transient and offshore populations are currently not of conservation concern. The reduced availability of depleted Chinook salmon populations has limited the population's productivity. High levels of chemical contaminants, noise and disturbance from vessels and other human activities, as well as large oil spills all have the potential to negatively impact the health and status of the population.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered (southern residents only)	Endangered	Yes	G4G5	S1S2	Low/declining (southern residents); Moderate/unknown (transients and offshores)	Southern residents: Moderate-high Transient/offshore Low-moderate

Biology and Life History

Photo: NOAA

Three populations of Killer Whales, known as the southern residents, transients, and offshores, regularly occur in Washington. The southern resident population is comprised of three highly stable social groups (J, K, and L pods) and commonly inhabits waters around the San Juan Islands and the eastern Strait of Juan de Fuca from late spring to fall. Most of the rest of the year is spent along the outer coast. This population feeds primarily on Chinook salmon, chum salmon to a lesser extent, and occasionally other fish. Transient animals are part of a single population ranging from southeastern Alaska to California that feeds on seals and other marine mammals. Offshore Killer Whales are much less studied, but also form one population extending from southeastern Alaska to California. These whales usually occur more than 9 miles off the outer coast and feed primarily on sharks and other fish. All Killer Whales become sexually mature at about 12 to 16 years of age. Females become reproductively senescent when 35 to 45 years old. Estimated maximum lifespan is 80 to 90 years in females and 50 to 60 years in males. Calving interval is about 3 to 8 years.

Distribution and Abundance

Killer Whales are distributed nearly worldwide. In Washington, they occur in nearly all of the state's marine waters. The southern resident population has shown an overall declining trend since 1995, falling from 98 whales to 81 whales in March 2015. Minimum estimates of transient and offshore populations are 243 and 240 whales, respectively, but only small portions of both populations normally occur in Washington at any one time. Trend information does not exist for these populations.

Habitat

Pelagic and coastal waters are occupied. Southern resident and transient Killer Whales spend more time in coastal areas (including inland marine waters), where their preferred prey is typically found.

References

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Killer Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Overharvesting of biological resources	Depleted populations of Chinook salmon reduce prey availability for the southern residents, thereby limiting the population's productivity.	Rebuild depleted populations of Chinook salmon through multiple restoration activities, including management of habitat, harvest, hydropower, and hatcheries.	Current insufficient	Both
2	Outreach needs	Noise and disturbance from vessels and other human activities has the potential to disrupt foraging and other behavior by the southern resident population.	Minimize disturbance from vessels by continued evaluation and enforcement of regulations and guidelines protecting Killer Whales from vessel noise and disturbance.	Current insufficient	Both
3	Fish and wildlife habitat loss or degradation	High levels of chemical contaminants continue to exist in southern resident whales and may be causing health impacts.	Minimize pollution levels in aquatic habitats.	Current insufficient	External
4	Energy development and distribution	Large oil spills could harm Killer Whale populations through negative impacts to health.	Minimize the risk of oil spills in Washington and elsewhere along the west coast of North America.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

MINKE WHALE (*Balaenoptera acutorostrata*)

Conservation Status and Concern

The stock along the U.S. west coast, including Washington, is estimated at about 500 whales, with trend unknown. Ship strikes and fisheries entanglements may hinder population growth.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	No	G5	SNA	Low/unknown	Low-moderate

Biology and Life History

Photo: NOAA

This small baleen whale is usually solitary or found in groups of two to three individuals, but occasionally forms larger loose aggregations with many animals at favored feeding locations. Some populations migrate between higher latitude waters in summer and lower latitude waters in winter, while others maintain home ranges and are not migratory. Adults tend to migrate farther than immatures. Gestation lasts 10 to 11 months. In the northern hemisphere, single calves are born from November-March. Young are weaned by 4 to 6 months of age; calving occurs every 1 to 4 years. Age of sexual maturity is usually 6 to 8 years. Lifespan is estimated to reach 50 years. Diet consists mainly of small schooling forage fishes and krill.

Distribution and Abundance

Minke Whales are found throughout the world's oceans in tropical, temperate, and subpolar waters. Global population size is unknown, but the species is relatively common overall. Minke Whales are rare along the U.S. west coast and belong to the California/Oregon/Washington Stock. Although this stock was never commercially harvested, it is estimated to total only about 478 whales based on surveys conducted in 2005 and 2008. Stock trend is not known. The stock is non-migratory. A few members of the stock reside in Washington's inner marine waters for part of the year.

Habitat

Both coastal and pelagic waters are occupied. Important habitat features may include water temperature, depth, and underwater topography.

References

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Minke Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
	Resource information collection needs	Improve assessment of occurrence and threats in Washington.	Expand efforts to document the species in Washington waters.	Current insufficient	External

NORTH PACIFIC RIGHT WHALE (*Eubalaena japonica*)

Conservation Status and Concern

The stock along western North America, including Washington, is critically endangered, with trend unknown. Threats to the stock are poorly known.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	No	G1	SNA	Critical/unknown	Moderate

Biology and Life History

A large slow-swimming baleen whale, North Pacific Right Whales migrate between higher latitudes during spring and summer and lower latitudes in winter. Females become sexually mature at 9 to 10 years of age. Calving occurs in coastal waters during winter and may occur every 3 to 5 years based on calving rates of similar species. Weaning takes place at about one year of age. The species feeds from spring to fall and also during parts of the winter. Diet consists of zooplankton, especially copepods. North Pacific Right Whales feed by swimming continuously with their mouths open and filtering prey against their baleen, a behavior known as skimming.

Photo: NOAA

Distribution and Abundance

Distribution is restricted to the Pacific Ocean between 20° and 60°N latitude, with most remaining individuals concentrating in the northwestern Pacific and Bering Sea. Winter distribution is poorly known. The species was severely depleted by whaling and it is now one of the rarest of all marine mammals, with a total population of perhaps only a few hundred animals. Trend in abundance is unknown, but the population has failed to increase significantly following protection. Individuals in the northeastern Pacific, including Washington, belong to the Eastern North Pacific Stock. Size of this stock probably numbers below 50 whales. Stock trend is unknown, but sightings of calves are rare. The last record of a North Pacific Right Whale off Washington was in 1992. At least seven confirmed records off British Columbia, Oregon, California, and Mexico since 1994 suggest that the species still rarely visits Washington.

Habitat

The species mainly inhabits coastal and continental shelf waters, but is sometimes found in deep waters. Occurrence is often strongly linked to areas of high prey abundance.

References

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North Pacific Right Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
	Resource information collection needs	Document sightings in Washington and identify potential threats in state waters.	Expand efforts to document the species in Washington waters.	Current insufficient	External

SEA OTTER (*Enhydra lutris kenyoni*)

Conservation Status and Concern

Washington's population of Sea Otters has shown steady growth to almost 1,600 animals since its reintroduction in 1969 and 1970. Oil spills are the greatest potential threat to the population.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Species of Concern	Endangered	Yes	G4T2T3	S2S3	Low/increasing	Low-moderate

Biology and Life History

Photo: R. LeValley

The Sea Otter is the smallest of the marine mammals and the largest member of the weasel family (Mustelidae). It is a carnivore and feeds on urchins, crabs, clams, mussels, snails, and chitons. It uses rocks to break the shells and exoskeletons of its prey and expose the edible interior of these species. Predation by Sea Otters on urchins has been found to maintain stability within marine invertebrate communities; the species is considered a keystone species because of this effect. The dense fur of the Sea Otter made its pelt extremely valuable to fur traders, which led to overexploitation of the species in the 1700s and 1800s. Otter mortality can result from oil spills and incidental capture in nets and traps set for fish, shell fish, and crabs.

Distribution and Abundance

The Sea Otter is found only in the northern Pacific Ocean. In Washington it is limited in distribution to the marine waters from just south of Destruction Island north to Cape Flattery, and east to Pillar Point in the Strait of Juan de Fuca. The Washington population had increased steadily from 59 individuals reintroduced in 1969 to 1970 to almost 1,600 otters in 2014.

Habitat

Sea Otters are commonly found in rocky marine habitats and kelp beds within 1.2 miles of the coast. Females tend to use habitats closer to the shore than males. In rough weather, otters take refuge among kelp, or in coves and inlets.

References

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Lance, M. M., S. A. Richardson, and H. L. Allen. 2004. Washington state recovery plan for the sea otter. Washington Department of Fish and Wildlife, Olympia, Washington.

Sea Otter: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Energy development and distribution	Oil spills are potentially a major source of mortality and habitat loss and degradation.	Prevention of oil spills and responses to spills should remain a management priority.	Current insufficient	External
2	Fish and wildlife habitat loss or degradation	The population is vulnerable because of its limited distribution and size.	Continue current surveys to assess population trends and range expansion.	Current sufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

SEI WHALE (*Balaenoptera borealis*)

Conservation Status and Concern

The stock along the U.S. west coast, which includes Washington, is quite small at about 125 whales, with trend unknown. Threats to the stock are poorly understood.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	No	G3	SNA	Critical/unknown	Low-moderate

Biology and Life History

Photo: NOAA

This large baleen whale is the fastest swimming whale. The species usually travels alone or in groups of two to five, but occasionally forms loose gatherings of 30 to 50 animals on productive feeding grounds. Movement patterns are not well known, but many animals are thought to migrate between lower latitude wintering grounds and higher latitude feeding grounds in the summer. A single calf is born in winter (from September to March) after a gestation period of 11 to 13 months. Calving interval among females is 2 to 3 years. The species reaches sexual maturity at 6 to 12 years. Sei Whales are flexible in their prey selection and feed on copepods, krill, squid, and small schooling fishes (e.g., anchovies, saury, and mackerel). Foraging methods include both skim feeding at the surface and gulp feeding below the surface.

Distribution and Abundance

Subtropical, temperate, and subpolar water are occupied worldwide, although overall distribution is not well understood. The current global population is estimated at 80,000 animals. Sei Whales along the west coast of North America, including Washington, are part of the Eastern North Pacific Stock, which extends west to 180° longitude. No population estimates or trend data are available for the full stock. Animals are rarely recorded off the U.S. west coast, with only nine confirmed sightings made in California, Oregon, and Washington waters during extensive ship and aerial surveys from 1991 to 2008. The most recent estimate of abundance for California, Oregon, and Washington waters out to 300 nautical miles was 126 whales from 2005 to 2008. Population trend for this area is unknown.

Habitat

This species generally occurs along the edges of continental shelves and in deeper oceans, especially where ocean fronts and eddies exist. Temperate waters may be preferred.

References

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Sei Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
	Resource information collection needs	Improve assessment of occurrence and threats in Washington.	Expand efforts to document the species in Washington's waters.	Current insufficient	External

SPERM WHALE (*Physeter macrocephalus*)

Conservation Status and Concern

The stock along the U.S. west coast, that includes Washington, numbers no more than several thousand whales, with trend probably stable. Fisheries entanglements are a relatively minor source of mortality and injury.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	Yes	G3G4	SNA	Low/stable	Low-moderate

Biology and Life History

Photo: Wikimedia Commons

Sperm Whales are large toothed whales. Adult females, calves, and juveniles form groups of usually 20 to 40 animals. As males grow older, they join bachelor schools that can hold up to 50 whales, but eventually become solitary. Sperm Whales do not undertake predictable seasonal migrations, although there is a general trend among animals at mid-latitudes to move poleward during summer and return during winter. Single calves are produced every 3 to 6 years. Births occur in warmer regions, with those in the northern hemisphere taking place in May to September. Females reach sexual maturity at 7 to 11 years, whereas males may not breed until age 25. The species can dive beyond depths of 5900 feet when foraging. Diet is primarily composed of medium to large squid, sharks, skates, and other fish.

Distribution and Abundance

Distribution encompasses the world's oceans from the tropics to higher latitudes. Females are generally found in warmer waters (greater than 60°F) at latitudes lower than 40°, but may occur to 50° latitude in the North Pacific. Adult males spend much of their time in colder waters near pack ice, but occasionally return to warmer regions to breed. Global population sizes are not accurately known. Most sperm whales in Washington belong to the California/Oregon/Washington Stock. The most recent estimate of stock size is 2,431 whales based on ship surveys made in 2008; trend was probably stable from 1991 to 2008. Sperm Whales are present in deeper waters off Washington in all seasons except winter. Members from another stock, the North Pacific Stock which inhabits Alaska, are also known to move through Washington's waters. Numbers for the entire eastern temperate North Pacific were last estimated at 26,300 to 32,100 whales in 1997.

Habitat

The species generally prefers deep water, but is sometimes found in shallower continental shelf waters. Densities are usually highest near productive waters, including near steep drop-offs or strong oceanographic features such as the edges of continental shelves, near offshore banks, and over submarine trenches and canyons.

References

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Sperm Whale: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
	Overharvesting of biological resources	Entanglement in fisheries gear (netting, pots, and traps) is a cause of mortality and injury off the U.S. west coast.	Determine ongoing sources of bycatch and manage those fisheries to reduce bycatch.	Current insufficient	External

UNGULATES

BIGHORN SHEEP (*Ovis canadensis*)

Conservation Status and Concern

Although a game species and sustainably hunted, Bighorn Sheep remain a conservation reliant species. Bighorns currently occupy approximately 15 to 20 percent of their historical habitat in Washington, and connectivity among individual herds is difficult to establish. Bighorns are susceptible to pneumonia caused by bacteria routinely carried by domestic sheep and goats.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
None	None	Yes	G4	S2S3	Low/variable	Moderate

Biology and Life History

Photo: J. Cummins

This species is gregarious, but for most of the year adult males live apart from females and young. In the mating season, mature males generally dominate younger males and battle over access to females through vigorous head butting contests, but during most of the rest of the year they live amiably in small bands apart from the females. The timing of the mating season is generally November in Washington. Lambing generally peaks in April into May in Washington. Females typically bear one lamb. Females first breed usually in their third year. Diet is diverse and variable. Bighorn Sheep are primarily grazers of grass and forbs, but the diet can also include significant amounts of shrubs. Their diet changes seasonally. Access to mineral licks may be important for the Rocky Mountain Bighorn Sheep (subspecies *O. canadensis canadensis*), especially in spring.

Distribution and Abundance

Bighorn Sheep in Washington number approximately 1,330 individuals distributed in 17 identified herds, exclusive of those managed by tribal governments. The herds are distributed throughout eastern Washington except for the Columbia Plateau. As of early 2014, herds vary from as few as 21 to as many as 240 sheep. Populations are considered to be approximately stable in seven herds, increasing in four herds and declining in six herds.

Habitat

Bighorn Sheep occur in mesic to xeric, alpine to desert grasslands or shrub-steppe in mountains, foothills, or river canyons. Many of these grasslands are fire-maintained. Suitable escape terrain (cliffs, talus slopes, etc.) is an important feature of the habitat. Distribution is correlated with low precipitation levels, especially in winter and spring. Elevation varies considerably, both geographically and seasonally, in Washington from as low as 200 feet to over 6500 feet.

References

WDFW. 2014. Game management plan, July 2015-June 2021. Washington Department of Fish and Wildlife, Olympia, Washington.

Bighorn Sheep: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Invasive and other problematic species	Introduction of pneumonia into wild Bighorn Sheep from domestic sheep and goats can eliminate Bighorn Sheep herds.	Reduce to the degree feasible the probability of contact between bighorn sheep and domestic sheep and goats in all bighorn herds as well as in areas identified for repatriation of bighorn sheep.	Current insufficient	Both
2	Resource information collection needs	Individual Bighorn Sheep herds are small and thus susceptible to deleterious effects of genetic drift and inbreeding. Exploratory movements that would normally provide Bighorn Sheep with opportunities for genetic exchange are limited now because human development, fire suppression, or natural lack of escape terrain renders these populations isolated.	Evaluate and prioritize the need for genetic rescue/augmentation of small isolated populations, find and procure source animals that are not closely related to target populations, and implement and monitor translocations.	Currently insufficient	Both
3	Management decision needs	Habitat succession and fire suppression.	On WDFW lands, continue prescribed burns where appropriate and feasible; encourage federal land managers to restore the natural role of fire where possible.	Currently insufficient	Both
4	Invasive and other problematic species	Predators, particularly Cougars, occasionally become specialists on Bighorn Sheep. Because Bighorn Sheep live in small, isolated, and predictable habitats, individual predators can occasionally cause declines and threaten persistence of entire herds.	Where excessive predation is suspected to be an important limiting factor, consider removing individual predators that specialize on Bighorn Sheep, or consider augmentations to allow imperiled herds to grow beyond the point where isolated predators are limiting.	Currently insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

COLUMBIAN WHITE-TAILED DEER – COLUMBIA RIVER DPS (*Odocoileus virginianus leucurus*)

*See Appendix B for a potential range and habitat distribution map

Conservation Status and Concern

This subspecies exists in small, isolated populations, rendering it vulnerable to such factors as disease and stochastic events. Continued habitat degradation will impede recovery by further fragmentation of existing habitat and loss of areas for future range expansion. In addition, this species has the potential to be greatly affected by climate change due to sea level rise that will reduce island and lowland coastal habitats. Periodic major flood-events have already been shown to impact survival of all age classes. Coyote predation has been a significant cause of mortality among fawns in Washington. Vehicle collisions are another source of mortality, especially for newly translocated deer.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	Yes	G5T2Q	S1	Low/stable	Moderate-high

Biology and Life History

The Columbian White-tailed Deer is the westernmost subspecies of White-tailed Deer. Diet consists of grasses, forbs, and browse. The deer are sedentary year-round, with home ranges averaging 475 acres for males and 395 acres for females. Rutting activities peak in November. Fawns are born during the summer months, and peak in June.

Photo: J.V. Higbee

Distribution and Abundance

Historically, Columbian White-tailed Deer were distributed throughout the lowlands of southwestern Washington and western Oregon, but now remain in two geographically isolated populations: in Douglas County, Oregon, and along the lower Columbia River. The latter population, known as the Columbia River Distinct Population Segment (DPS), is found on islands in the Columbia River and adjacent areas of Clark, Cowlitz, and Wahkiakum Counties, Washington, and Clatsop, Columbia, and Multnomah Counties, Oregon. The DPS has experienced a roughly stable trend since the mid-1990s. Puget Island (Washington), Wallace Island (Oregon), and the Oregon mainland near Westport support two of the largest and more stable subpopulations (each about 150 to 200 deer in 2011). Deer were translocated to Ridgefield National Wildlife Refuge from 2013 to 2015 to establish a subpopulation there. As of January 2014, the entire Columbia River DPS totaled about 600 deer.

Habitat

Columbian White-tailed Deer are strongly associated with riparian habitat. They inhabit riparian forest, brushland, and pasture on islands and within the floodplain of the lower Columbia River. Forested swamps with tall shrubs and Sitka spruce, red-osier dogwood, red alder, black cottonwood, and willow characterize the native vegetation of this area.

References

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Columbian White-tailed Deer: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Fish and wildlife habitat loss or degradation	Populations are isolated due to historical harvest and habitat loss and fragmentation.	Continue conducting translocations and population augmentations.	Current sufficient	Both
2	Management decision needs	Significant flooding events can and have had impacts on subpopulations.	Build and maintain water control structures on refuges, as needed, to manage water levels in sloughs and marshes. Consider construction of high-water refugia.	Current insufficient	External
3	Management decision needs	Suitable natural habitat is unstable and limited.	Manage vegetation to maintain/expand a mosaic of marshes, woodlands and grasslands.	Current insufficient	Both
4	Resource information collection needs	Suitable natural habitat is unstable and limited. There is a need to search for suitable habitat beyond what is currently occupied.	Identify high quality upland habitat in areas that might support deer populations regardless of land ownership.	Current insufficient	Both
5	Invasive and other problematic species	Coyote predation causes high fawn mortality and has a disproportionate effect on small subpopulations.	Continue efforts to control Coyotes.	Current sufficient	External
6	Invasive and other problematic species	Invasive plants erode utility of habitats.	Implement efforts to control invasive plants.	Current insufficient	Both
7	Resource information collection needs	Recovery goals for population size and distribution may no longer be adequate to achieve recovery.	Conduct a population and habitat viability analysis (PHVA) of the DPS to address adequacy of current recovery priorities and activities.	Current insufficient	Both

NOTE: Numbers are for reference only and do not reflect priority.

WOODLAND CARIBOU (*Rangifer tarandus*)

*See Appendix B for a range and potential habitat distribution map

Conservation Status and Concern

The South Selkirk Woodland Caribou population has been adversely affected by predation and habitat change. The core range for this population, which overlaps into Washington, is in British Columbia. The population is at a perilously low level with recent annual calf mortality recorded at 40 to 70 percent mainly due to predation, severe weather, and malnutrition.

Federal Status	State Status	PHS	Global Ranking	State Ranking	Population size/trend	Climate Vulnerability
Endangered	Endangered	Yes	G5T4	S1	Critical/declining	High

Biology and Life History

The Woodland Caribou that overlap into Washington belong to the South Selkirk population and are a unique ecotype of caribou distinguished from other Woodland Caribou by a diet of almost exclusively arboreal lichens during the coldest six months of the year. This trait allows them to inhabit the deep snow areas in the Selkirk Mountains above 4,000 feet, and these are often referred to as "mountain caribou." At other times of the year, diet consists largely of dried grasses, sedges, huckleberry leaves, willow and dwarf birch tips, and arboreal lichens. Woodland Caribou form relatively small groups. Herd size ranges from single females during calving up to about 25 animals during late winter; small groups of two to five animals are typical during spring and summer. Most Woodland Caribou move to lower elevations in early winter and re-ascend in late winter. In spring, they again descend to lower elevations, and then in summer move back up to the mountains as the snowpack disappears.

Photo: J. Adams

Distribution and Abundance

The South Selkirk population is restricted to southeastern British Columbia, northern Idaho, and northeastern Washington. The population has declined from an estimated 46 caribou in 2009 to 18 animals in 2014. Woodland Caribou were observed only in British Columbia during the March 2014 survey. In December 2014, a radio-collared individual was detected in the far northern Selkirk Mountains in Washington.

Habitat

South Selkirk Woodland Caribou inhabit rugged mountainous regions with old-growth forests of Engelmann spruce/subalpine fir and western red cedar/western hemlock that are generally more than 100 to 150 years old. These forests support abundant arboreal lichens on which caribou forage. Tracts of old-growth spruce and western red-cedar/western hemlock on moderate slopes are critical early-winter habitats. Young are born typically in severe isolated sites on high ridges.

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Woodland Caribou: Conservation Threats and Actions

	STRESSOR	DESCRIPTION	ACTION NEEDED	LEVEL OF INVESTMENT	LEAD
1	Small population size	Genetic and demographic effects of small population size.	Consider measures to increase population size, including translocations, captive breeding, and shepherding.	Current insufficient	External
2	Management decisions	Predation by Cougars and Gray Wolves may result in mortality levels that are unsustainable for the very small population.	Removal of individual Cougars and Gray Wolves may be needed to reduce predation levels.	Current sufficient	Both
3	Fish and wildlife habitat loss or degradation	Highway mortality, especially in British Columbia.	Take steps to reduce highway collisions with vehicles, including increased signage to warn motorists, speed limit restrictions, and possible construction of highway underpasses.	Current insufficient	External
4	Fish and wildlife habitat loss or degradation	Human disturbance, including snowmobiles.	Maintain road closures and restrictions on snowmobile use in areas inhabited by Woodland Caribou.	Current insufficient	External
5	Fish and wildlife habitat loss or degradation	Loss and degradation of mature forest eliminates Woodland Caribou habitat.	Protect mature forest from harvest and road building, especially those areas important for calving. Presence of mature forest may also help reduce predation by Cougars and Gray Wolves and competition with White-tailed Deer and Elk.	Current insufficient	External

NOTE: Numbers are for reference only and do not reflect priority.

REFERENCES

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SECTION B: Explanation of Terms

Conservation Status Table

Federal Status
Refers to legal designations under the Federal ESA (listed as Endangered or Threatened or recognized as a Candidate species for listing), or designated as a Sensitive species.

State Status
The Washington Fish and Wildlife Commission has classified 46 species as Endangered, Threatened or Sensitive, under WAC 232-12-014 and WAC 232-12-011. Species can also be designated Candidate Species for state listing by WDFW policy.

PHS (Priority Habitats and Species Program)
A species listed under the PHS program is considered to be a priority for conservation and management and requires protective measures for survival due to population status, sensitivity to habitat alteration and/or tribal, recreational or commercial importance. Management recommendations have been developed for PHS species and habitats, and can assist landowners, managers and others in conducting land use activities in a manner that incorporates the needs of fish and wildlife.

- **Global (G) and State (S) Rankings:** Refers to NatureServe status rankings provided by the Natural Heritage Program. These conservation status ranks complement legal status designations and are based on a one to five scale, ranging from critically imperiled (1) to demonstrably secure (5). The global (G) and state (S) geographic scales were used for the SGCN species fact sheets. For more on the methodology used for these assessments, please see: Methodology for Assigning Ranks - NatureServe.

State Rank: characterizes the relative rarity or endangerment within the state of Washington.
S1 = Critically imperiled
S2 = Imperiled
S3 = Rare or uncommon in the state – vulnerable
S4 = Widespread, abundant, and apparently secure i
S5 = Demonstrably widespread, abundant, and secure in the State
SA = Accidental in the state.
SE = An exotic species that has become established in the state.
SH = Historical occurrences only are known, perhaps not verified in the past 20 years, but the taxon is suspected to still exist in the state.
SNR or **S?** = Not yet ranked. Sufficient time and effort have not yet been devoted to ranking of this taxon.
SP = Potential for occurrence of the taxon in the state but no occurrences have been documented.
SR = Reported in the state but without persuasive documentation which would provide a basis for either accepting or rejecting the report (e.g., misidentified specimen).
SRF = Reported falsely in the state but the error persists in the literature.
SU= Unrankable. Possibly in peril in the state, but status is uncertain. More information is need.
SX = Believed to be extirpated from the state with little likelihood that it will be rediscovered.
SZ = Not of conservation concern in the state.

Qualifiers are sometimes used in conjunction with the State Ranks described above:
B - Rank of the breeding population in the state.
N - Rank of the non-breeding population in the state.

Global Rank: characterizes the relative rarity or endangerment of the element world-wide.
G1 = Critically imperiled globally
G2 = Imperiled globally
G3 = Either very rare and local throughout its range or found locally (even abundantly at some of its locations) in a restricted range - vulnerable
G4 = Widespread, abundant, and apparently secure globally
G5 = Demonstrably widespread, abundant, and secure globally, though it may be quite rare in parts of its range
GH = Historical occurrences only are known, perhaps not verified in the past 20 years, but the taxon is suspected to still exist somewhere in its former range.
GNR or **G?** = Not yet ranked. Sufficient time and effort have not yet been devoted to ranking of this taxon.
GU = Unrankable. Possibly in peril range-wide but status uncertain. More information is needed.
GX = Believed to be extinct and there is little likelihood that it will be rediscovered.

Qualifiers are used in conjunction with the Global Ranks described above:
Tn Where n is a number or letter similar to those for Gn ranks, above, but indicating subspecies or variety rank. For example, G3TH indicates a species that is ranked G3 with this subspecies ranked as historic.

1. Key Conservation Threats (Stressor) and Actions Table

The **"Level of Investment"** column is meant to be a coarse assessment of whether the action referenced is sufficient (stay the course), insufficient (invest more resources when available), or "new action needed" (nothing is currently underway and new action needs to be initiated).

The **"Lead"** column refers to whether WDFW has the lead for that particular action (WDFW), or whether external conservation partners have the lead (external), or whether WDFW shares the lead with one or more organizations (Both).

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