APPENDIX C

STRATEGIC SPECIES LISTED IN THE OREGON CONSERVATION STRATEGY THAT RELY ON BEAVER-CREATED HABITAT

Taxa	Species Common Name	Special Needs	Conservation Actions
Amphibian	Cascades Frog	Cascades frogs inhabit mountain meadows, **bogs, ponds**, or potholes above 2,400 feet elevation. They require access to **clean, permanent water sources**. Cascades frogs lay eggs in slow-moving water, at **shallow, sunny edges of ponds, or on low vegetation near ponds** where warm sunlight speeds egg development. Larvae may "school" in large masses.	**Maintain habitat connectivity. Monitor and address impacts of** fish stocking and **poor water quality. Carefully manage** livestock grazing in **occupied wet meadows**. Use prescribed burning or hand-felling of trees periodically to manage plant succession. If reintroductions are warranted, use individuals from nearby sites and consult results of feasibility studies. Conservation actions in Oregon are particularly valuable given reductions in other parts of the range.
Amphibian	Clouded Salamander	Clouded salamanders prefer forest habitat or burned areas. They are often found among talus, debris, or in large, decaying logs.	Retain patches of intact habitat, including large logs, during forest management activities. Identify areas of high salamander density and leave them undisturbed as 'seed populations' from which remaining habitat can be recolonized as it recovers from alteration. **Provide adequate riparian buffer strips** (see Partners in Amphibian and Reptile Conservation recommendations) and downed wood.
Amphibian	Columbia Spotted Frog	Columbia spotted frogs breed and forage in **permanent ponds, marshes, and meandering streams through meadows, especially areas of shallow water and emergent vegetation.** They use **springs and other sites with low, continuous water flow** for overwintering.	Identify occupied sites and **maintain vegetation buffers.** Control bullfrogs and invasive fish at priority locations.

Taxa	Species Common Name	Special Needs	Conservation Actions
Amphibian	Northern Red-legged Frog	Northern red-legged frogs are typically associated with **shallow-water ponds and wetlands with emergent vegetation**. For breeding, they require forested sites with exposed (sunny), **still-water habitat**. Breeding habitat may be seasonal or permanent, provided the water persists at least 5 months in duration. Adults and juveniles also use **moist riparian** and upland forests.	Revise wetland hydroperiod requirements for mitigation and other created wetlands in occupied areas to reduce 'population sinks'. Create upland buffer and aquatic habitat retention requirements for housing developments to minimize local extirpations in the Willamette Valley. Identify regionally important sites to the species and maintain connectivity between them. **Maintain wetland habitat with emergent plants** and adjacent forest. Address barriers and/or culverts at key road crossings to reduce mortality of lowland (Willamette Valley and Coast Range) frogs. Control bullfrogs and invasive fish at priority sites.
Amphibian	Oregon Spotted Frog	Oregon spotted frogs use **permanent ponds, marshes, and meandering streams through meadows** for breeding and foraging**, especially those with shallow water and a bottom layer of dead and decaying vegetation.** They rely on **springs and other sites with low, continuous water flow** for overwintering.	**Protect vegetation buffers around occupied sites. Improve hydrology** to benefit overwintering and larval habitat. Control bullfrogs and invasive fish at priority sites. **Carefully manage** livestock grazing at occupied **montane wet meadows**. Use results of feasibility studies to guide specific conservation actions and management decisions for reintroductions.
Amphibian	Rocky Mountain Tailed Frog	Rocky Mountain tailed frogs breed in **clear, cold streams**. Larvae are typically found in reaches with cobbles or boulders and are adapted to cling to rocks and scrape diatoms. Adults forage for insects at night.	Identify, protect, and provide connections among key habitat areas, including upland refugia. Maintain the integrity of stream substrates and microclimates at occupied sites. **Protect vegetation buffers around occupied sites**. Reduce stream substrate disturbance. Retain upland canopy cover. Restrict chemical applications, non-native predators in streams, and livestock grazing.

Taxa	Species Common Name	Special Needs	Conservation Actions
Amphibian	Western Toad	Western toads use **wetlands, ponds, and lakes** for breeding. They prefer extensive, sunny **shallows with short, sparse, or no vegetation** for egg-laying and for tadpole schools to move widely as they forage on organic mud and surface diatoms.	**Maintain water levels and vegetation buffers at major breeding sites**. Install culverts or drift fences at problem road crossings near major breeding sites. Inform recreationists about the importance of minimizing shoreline impacts. Perform periodic control of vegetation height and density at occupied sites where these factors could interfere with breeding. Use distribution information when considering new developments, especially at mid- or low-elevation locations.
Bird	Black-necked Stilt	Black-necked Stilts are generally found in alkali wetlands and **freshwater ponds and lakes**. They prefer foraging sites with **extensive shallows** and those that are free of human disturbance.	Maintain suitable nesting and foraging areas across the landscape to provide sufficient habitat, regardless of annual variation in precipitation and water levels. Monitor and address polluted runoff concerns, including organochlorine pesticides, selenium, and mercury.
Bird	Common Nighthawk	Common Nighthawks use gravel bars and other sparsely-vegetated grasslands or forest clearings for nesting. As aerial insectivores, they require an adequate prey base.	Maintain sparsely-vegetated grassland patches. Restore natural disturbance regimes. **Restore riparian and wetland habitat** to support the insect prey base of nighthawks.
Bird	Greater Sage-Grouse	Greater Sage-Grouse require expansive sagebrush habitat that encompasses a mosaic of conditions. They use **wet meadows and playas** during brood-rearing, especially areas with native forbs.	See the detailed presentation in the Greater Sage-Grouse Conservation Assessment and Conservation Strategy for Oregon (Hagen 2011).
Bird	Greater Sandhill Crane	Greater Sandhill Cranes require **relatively large wetland-wet/dry meadow complexes with a mosaic of aquatic and herbaceous conditions** for nesting and foraging.	**Maintain and/or enhance hydrological conditions** to support suitable habitat conditions for nesting and foraging in tracts >20 acres. Where hydrology can be managed, include both **wet and dry meadow habitat** through the nesting season. Minimize disturbance during the breeding season (April 15-July 31) at known nesting areas. Use prescribed burning or hand-felling of trees periodically to set back plant succession.

Taxa	Species Common Name	Special Needs	Conservation Actions
Bird	Lewis's Woodpecker	This species has five major habitat types: ponderosa pine forests, oak woodlands, oak-pine woodlands, **cottonwood riparian forests**, and areas burned by wildfires. In all cases, special needs include aerial insects for foraging, large snags for nesting (especially soft or well-decayed snags), and relatively open canopy for flycatching.	Maintain or restore open oak, ponderosa pine, and cottonwood woodlands, along with post-fire ponderosa pine habitat. Use nest boxes to enhance habitat in known nesting areas.
Bird	Long-billed Curlew	Long-billed Curlews are found in open habitat with relatively short grass and little woody vegetation. In the Northern Basin and Range ecoregion, much of the suitable habitat is comprised of **sub-irrigated meadows created by adjoining flood-irrigated meadows.**	Expand partnerships with private landowners to maintain and restore large patches of short grass habitat, including ranching operations. Minimize human disturbance from March 15-July 1 at known nesting areas. **Increase water availability** during key brood-rearing periods **through impoundments**, securing water rights on public and private lands, and the development of incentives for private land managers to use more compatible water management practices when practicable.
Bird	Mountain Quail	Mountain Quail are found in shrubby, **riparian habitat adjacent to grassy uplands**.	Expand partnerships with private landowners to maintain and/or provide suitable habitat. **Coordinate riparian restoration** with management of suitable adjacent uplands.
Bird	Olive-sided Flycatcher	Olive-sided Flycatchers are generally associated with open forests, often near water and with **tall, prominent trees and/or snags**. They may use open, mature coniferous forest, forested **riparian areas**, forest openings (e.g., burns, harvested forest), and forest edges. They prefer hemlocks or true firs for nesting and require abundant insects for prey.	Maintain scattered, large, dead trees in patchy wildfire zones. Maintain natural openings, but minimize harvested forest openings within mature forest landscapes.

Taxa	Species Common Name	Special Needs	Conservation Actions
Bird	Red-necked Grebe	Red-necked Grebes inhabit large lakes and ponds within a forested landscape. They require deep water for foraging and **marshy, emergent vegetation** for nesting.	Maintain and **enhance marshy vegetation** at occupied site(s). Minimize disturbance at breeding and roosting locations. This species readily uses artificial wetlands. Artificial nest platforms have been used successfully on Lake Ontario.
Bird	Short-eared Owl	Short-eared Owls require **large expanses of marshes and wet prairies** for foraging and nesting.	**Maintain and restore wetland habitat**, with an emphasis on maintaining large patches and/or expanding smaller ones. Minimize disturbance at communal roost sites.
Bird	Trumpeter Swan	Trumpeter Swans are closely associated with **wetlands**. Breeding pairs, wintering birds, and migrants need high-quality **marshes, ponds, or other water bodies** with **submerged aquatic plants** for foraging and **emergent vegetation** for nesting. They require sites with minimal human disturbance.	Improve and **protect emergent wetlands** through enhanced water distribution and management capability. Mark/modify known powerline collision hazards. Continue translocation efforts to enhance/expand the Oregon breeding population.
Bird	Upland Sandpiper	Upland Sandpipers have large breeding area requirements. They use **wet and dry meadows** in small valleys, such as Logan Valley, Bear Valley, and around Ukiah. They prefer medium-height grasses with **high plant diversity**. They can also be found in lodgepole pine and sagebrush adjacent to grasslands.	Expand partnerships with private landowners to determine and implement appropriate conservation on suitable habitat patches. Remove encroaching lodgepole pine trees in meadows.
Bird	Willow Flycatcher	Willow Flycatchers are dependent upon **riparian shrub habitat.** They require a **dense, continuous or near-continuous shrub layer, especially of willows**.	**Restore brushy patches of willow and other native shrubby habitat near water.** Control non-native plants to maintain native shrub communities. Discourage Brown-headed Cowbird use of riparian areas through seasonal grazing and/or maintaining high grass heights in priority areas. **Restore riparian and early seral/montane meadow habitat** in the West Cascades.

Taxa	Species Common Name	Special Needs	Conservation Actions
Bird	Yellow Rail	Yellow Rails use **sedge meadows** for breeding. They prefer a **narrow range of water depths** and require the **presence of senescent vegetation**.	Maintain preferred water levels of approximately 2.4-2.8 inches during the breeding season. **Retain at least 50% of senescent vegetation** from year to year.
Bird	Yellow-breasted Chat	Yellow-breasted Chats are found in dense, brushy thickets, **especially near streams**.	**Restore large, dense thickets of native shrub-dominated riparian habitat**.
Fish	Bull Trout	Requires **cool temperatures** for spawning and rearing. Requires **channel complexity** and **available migratory corridors**.	Adaptively manage bull trout and kokanee harvest in Lake Billy Chinook. Angler education. Maintain or restore aquatic and riparian habitat. Restore connectivity. Manage against brook trout/lake trout. Habitat restoration. Restore connectivity. Manage against brook trout. Screening. Brook trout control. Establishment of additional "populations". Gravel augmentation. Evaluate potential for lake trout control. Continue ongoing restoration efforts involving landowners, tribes, and agency partners (NOAA, NMFS, ODFW, OWEB). Finalize draft USFWS recovery plan.
Fish	Chinook Salmon	Require **streams with clean gravel, complex habitat, and cool temperatures** for spawning and rearing. Require access for anadromous migration. Productive nearshore marine habitat that provides high-quality prey in sufficient quantity for rapid growth at time of ocean entry.	**Maintain or restore aquatic and riparian habitat.** Continue ongoing restoration efforts involving landowners, tribes, and agency partners (NOAA, NMFS, ODFW, OWEB). Manage for sustainable harvest.
Fish	Chum Salmon	Require **stream gravel bars with upwelling flow and side channels** near tidewaters for spawning. Migrate to ocean soon after emergence. Productive nearshore marine habitat that provides high-quality prey in sufficient quantity for rapid growth at time of ocean entry.	**Maintain or restore** aquatic, estuarine, and **riparian habita**t. Continue ongoing restoration efforts involving landowners, tribes, and agency partners (NOAA, NMFS, ODFW, OWEB). Manage for sustainable harvest.

Taxa	Species Common Name	Special Needs	Conservation Actions
Fish	Coastal Cutthroat Trout	**Large woody debris, in-stream structures, and vegetation** important for protection while in freshwater. Juveniles prefer **side channels, backwaters, or pools** for rearing. **Clean gravel** for spawning and rearing. **Migratory corridors.**	**Maintain or restore** aquatic, estuarine, and **riparian habitat, providing suitable water quality and habitat complexity**. Continue ongoing restoration efforts involving landowners, tribes, and agency partners (NOAA, NMFS, ODFW, OWEB). Reduce localized impacts where populations could become increasingly fragmented.
Fish	Coho Salmon	Require **streams with clean gravel, complex habitat, and cool temperatures** for spawning and rearing. Require access for anadromous migration. Productive nearshore marine habitat that provides high-quality prey in sufficient quantity for rapid growth at time of ocean entry.	Implement measures identified in Coastal Coho Assessment with landowners and agency partners NOAA, NMFS, State of Oregon (ODFW, OWEB, Independent Multidisciplinary Science Team), and Coastal Coho Stakeholder Team. Maintain or restore aquatic and riparian habitat. Continue ongoing restoration efforts involving landowners, tribes, and agency partners (NOAA, NMFS, ODFW, OWEB). Manage for sustainable harvest.
Fish	Great Basin Redband Trout	Several life history types with different migratory patterns. **Pools provide important habitat** for all life stages.	Address passage barriers. **Restore flow and riparian quality.** Screening.
Fish	Lahontan Cutthroat Trout	Restricted distribution. Found in small streams lacking numerous other fish species.	Continue ongoing recovery efforts to **monitor water availability and improve riparian condition and channel structure** (implementation of current recovery plan).
Fish	Lost River Sucker	Spawn in **rivers, streams, or springs associated with lake habitat**. After hatching, migrate to lakes. Need **shoreline river and lake habitat with vegetative structure** during larval and juvenile rearing.	Restore or enhance spawning and nursery habitat. **Reduce negative impacts of poor water quality** where necessary. Clarify and reduce the effects of introduced species on all life stages by conducting and applying scientific investigations. Reduce the loss of individuals to entrainment. Establish a redundancy and resiliency enhancement program. Increase juvenile survival and recruitment to spawning populations. Maintain and increase the number of recurring, successful spawning populations.

Taxa	Species Common Name	Special Needs	Conservation Actions
Fish	Miller Lake Lamprey	Spawn in **lakes.** Also inhabit **marshes or rivers.** Adults are smaller than late-stage larvae, possibly because of difficulty finding food, yet still can spawn. Adults parasitic; potential role of reducing egg predators.	Implement conservation plan adopted by ODFW in summer 2005. Also, increased understanding of biology will help in identifying habitat requirements and potential conservation actions. Remove barrier on Miller Creek.
Fish	Millicoma Dace	**Cool, swift streams. Cobbles and gravel** for rearing and spawning.	**Create and maintain gravel habitat. Maintain or restore flow and sediment regimes to improve habitat quality. Maintain or improve riparian conditions,** including habitat for beavers.
Fish	Pit Sculpin	Occupies fast-flowing rocky riffles of **cool, well-shaded, small streams, spring-fed creeks, and small boulder-strewn rivers.**	Continue habitat restoration.
Fish	Shortnose Sucker	Spawn in **rivers, streams, or springs associated with lake habitat.** After hatching, migrate to lakes. Need **shoreline river and lake habitat with vegetative structure** during larval and juvenile rearing.	Restore or enhance spawning and nursery habitat. **Reduce negative impacts of poor water quality** where necessary. Clarify and reduce the effects of introduced species on all life stages by conducting and applying scientific investigations. Reduce the loss of individuals to entrainment. Establish a redundancy and resiliency enhancement program. Increase juvenile survival and recruitment to spawning populations. Maintain and increase the number of recurring, successful spawning populations.
Fish	Steelhead / Rainbow / Redband Trout	Require **streams with clean gravel, complex habitat, and cool temperatures** for spawning and rearing, but able to spawn successfully in streams that are naturally intermittent in summer. Require access for anadromous migration, including adequate streamflow during downstream fry migration on naturally intermittent streams, and upstream passage for juveniles in winter during multiple years in freshwater.	**Maintain or restore** aquatic and **riparian habitat**. Continue ongoing restoration efforts involving landowners, tribes, and agency partners (NOAA, NMFS, ODFW, OWEB). Maintain momentum for restoration of fish passage throughout the Rogue watershed by continued funding of passage projects. **Restore streamflows** through cooperative projects.

Taxa	Species Common Name	Special Needs	Conservation Actions
Fish	Umpqua Chub	**Off-channel habitat (low flow, silty organic substrate, abundant vegetation, and cover).**	Reduce pollution. **Restore flow.** Reduce density of invasives in key habitat. Reintroductions useful at some sites. Limit nonpoint source pollution through Total Maximum Daily Load allocation process.
Fish	Warner Sucker	**Lakes and low-gradient stream reaches** of Warner Valley. Prefer **pool habitat in streams**. Juvenile stage is vulnerable to predation.	Maintain or restore spring waters. **Maintain or restore migration corridors** among habitat areas. **Increase stream flows** in lower sections of tributaries. **Restore wetland habitat.** Evaluate likelihood of long-term persistence in the presence of non-natives.
Fish	Western Brook Lamprey	May aggregate in high densities. Requires **fine gravel beds** for spawning. Larvae burrow in **fine sediment**. Timing of development closely linked to water temperature.	Improve passage. Alter timing of water draw-down. Use species-specific habitat requirements to guide management actions. See results of Lamprey Workgroup 2005 for strategies.
Fish	Westslope Cutthroat Trout	Specializes in foraging for invertebrates. Prefers **cool, clear streams** with coarse sediment.	**Maintain riparian cover** and other factors that can provide thermal cooling. Reduce localized impacts where populations could become increasingly fragmented.
Invertebrate	Bulb Juga	The bulb juga inhabits gravel-boulder riffles in cold, highly-oxygenated water.	**Maintain or restore high water quality.**
Invertebrate	California Floater Freshwater Mussel	In Oregon, California floater freshwater mussels use speckled dace as a primary host (and likely many other fish species as well). These mussels occur in lakes, slow rivers, and some reservoirs with mud or sand substrates. They are sedentary filter feeders that consume plankton and other particulate matter suspended in the water column, thereby contributing to nutrient cycling. California floater freshwater mussels may prefer **higher reaches of streams with high water quality.**	Protect known populations of host fish. **Maintain water quality.**

Taxa	Species Common Name	Special Needs	Conservation Actions
Invertebrate	Columbia Clubtail	Columbia clubtails are found in river and **stream habitat**. They lay eggs in the water, and larvae are aquatic.	Protect habitat known to support Columbia clubtails. Manage invasive species in occupied areas.
Invertebrate	Columbia Gorge Caddisfly	This species occurs only in **small streams** in the Columbia Gorge.	**Maintain stream water quality** and sediment regimes.
Invertebrate	Crater Lake Tightcoil	These terrestrial snails are generally found in **riparian areas**, **wet meadows**, and moist forests, often among shrubs and at the bases of plants.	**Maintain appropriate water flow and quality**. Prevent or mitigate for water diversions, dredging, or other activities that could increase sediment or nutrient levels.
Invertebrate	Great Spangled Fritillary	Great spangled fritillaries feed strictly on violets (mostly on *Viola glabella* in western Oregon).	Protect locations of preferred host plants. **Manage meadows to reduce conifer encroachment. Maintain hydrology** at known sites of occurrence.
Invertebrate	Highcap Lanx	The highcap lanx inhabits spring-influenced areas of larger rivers and tributaries.	**Maintain appropriate water flow and quality.** Prevent or mitigate for water diversions, dredging, or other activities that could increase sediment or nutrient levels.
Invertebrate	Insular Blue Butterfly	Insular blue butterflies typically inhabit **wet, open habitat, such as bogs, meadows, and ditches**. They also use coastal salt-spray meadows. Clovers serve as important host plants. Conifer trees adjacent to meadows can serve as shelter and windbreaks. This species is currently known to exist at only three sites, two of which are in Oregon (Cape Blanco and Bullards Beach State Parks).	Protect known sites of occurrence. Restore meadow habitat.
Invertebrate	Pacific Walker	Pacific walkers are semi-aquatic snails that inhabit **riparian areas**. They are typically found among wet vegetation along freshwater sources.	Protect known sites of occurrence. Investigate habitat requirements and use these to guide management actions.
Invertebrate	Purple-lipped Juga	The purple-lipped juga inhabits **gravel-boulder riffles in cold, highly-oxygenated water.**	**Maintain or restore high water quality.**

Taxa	Species Common Name	Special Needs	Conservation Actions
Invertebrate	Rotund Lanx	These freshwater mollusks are found in **large rivers**, such as the Umpqua, and **major tributaries**. They are generally associated with **rocky substrates and swift currents**.	**Maintain or restore watershed function and flow dynamics.**
Invertebrate	Vernal Pool Fairy Shrimp	Vernal pool fairy shrimp require **vernal pools or similar, ephemeral pools** to complete their life cycle. They prefer **small pools with cold water**. Prior to seasonal drying of the pools, females produce eggs ("cysts"). These cysts can dry out and lie dormant until pool re-filling occurs, at which time the eggs will hatch.	**Maintain or restore vernal pools** to provide habitat. **Maintain or restore water quality** in vernal pools.
Invertebrate	Western Ridged Mussel	Western ridged mussels are found in **cold creeks and streams**. They are filter-feeders with long lifespans.	**Maintain water quality and availability.**
Invertebrate	Winged Floater Freshwater Mussel	Winged floater freshwater mussels require a fish host. They occur in lakes, slow rivers, and some reservoirs with mud or sand substrates. They are sedentary filter feeders that consume plankton and other particulate matter suspended in the water column, and thereby contribute to nutrient cycling. These mussels **may prefer higher reaches of streams with high water quality**.	Protect known populations of host fish. **Maintain water quality.**
Mammal	California Myotis	This species is generally associated with forests. California myotis **use large snags** for day roosts. They are occasionally found night-roosting under bridges.	**Maintain and create large snags** during forest management activities. Complete bridge replacement and maintenance when bats are absent.

Taxa	Species Common Name	Special Needs	Conservation Actions
Mammal	Columbian White-tailed Deer	The Columbia River DPS is **strongly associated with riparian habitat** along the lower Columbia River. The Umpqua population is also found in **riparian areas** and may use lower-elevation oak woodlands as well.	For the Columbia River DPS, continue to implement conservation actions identified in the Columbian white-tailed deer recovery plan. For the Umpqua population, continue to monitor population status, manage habitat at North Bank Habitat Management Area, and evaluate translocation issues and priorities.
Mammal	Fisher	Fishers are found in forests and **riparian corridors** with moderate to dense canopy cover and diverse structural stages and plant communities. They use cavities in live or dead standing trees for den sites. Fishers prey on small mammals, including snowshoe hares and porcupines.	Maintain complex forest structure with large trees within the fisher's range. Improve habitat patch size and connectivity to provide for dispersal, genetic interchange, and population expansion. Use results of feasibility studies to guide specific conservation actions and management decisions for potential reintroductions. Work with Washington Department of Fish and Wildlife, U.S. Fish and Wildlife Service, and National Park Service to review outcomes of conservation actions. Develop a fisher conservation strategy.
Mammal	Fringed Myotis	Fringed myotis require forest habitat. They **use large snags** and rock features for day, night, and maternity roosts, and caves and mines for hibernacula. They feed primarily on beetles. They occasionally use bridges for night-roosting.	Use gates and seasonal closures to protect known hibernacula. **Retain and create** large-diameter hollow trees and large-diameter, tall, **newly-dead snags** during forest management activities.

Taxa	Species Common Name	Special Needs	Conservation Actions
Mammal	Long-legged Myotis	Long-legged myotis are found in forested areas. They are often associated with late-successional conifer forests or other forested habitat with late-successional components. They require large snags and hollow trees for day, night, and maternity roosts. They may also use bridges in forested habitat for night-roosting, and caves and mines for roosting and hibernating. They typically forage along **riparian corridors** and forest edges. In the East Cascades ecoregion, long-legged myotis are often associated with ponderosa pine, grand fir, and white fir.	**Maintain and create large-diameter hollow trees and large-diameter, tall, newly-dead snags in riparian** and upland **habitat**. **Maintain and restore diverse riparian areas**. Complete bridge replacement and maintenance when bats are absent. Incorporate snags of pine and fir species into forest management plans.
Mammal	Pallid Bat	Pallid bats are found in dry, open habitat. They use crevices in cliffs, caves, mines, or bridges (and sometimes, buildings) for day, night, or maternity roosts, or hibernacula. In some areas, they use snags as day roosts. Pallid bats prefer grassland, shrub-steppe, and dry forest ecotones for foraging. They also **associate with open-water sites within the landscape**.	Use gates and seasonal closures to protect known roost sites during sensitive times (raising young and hibernation). **Maintain open-water sources** in dry landscapes. Manage rock features, such as cliffs, to avoid conflict with recreational use and rock removal. Complete bridge replacement and maintenance when bats are absent. Maintain large pine snags in shrub-steppe/forest ecotones. Maintain and restore native grassland, shrub-steppe, and open ponderosa pine habitat.
Mammal	Ringtail	Ringtails occupy low-elevation forests with large-diameter snags and logs for dens. They are typically associated with late-successional forests. They may **also use riparian** and rocky **areas**.	Collect information on data gaps.
Mammal	Sierra Nevada Red Fox	Sierra Nevada red foxes inhabit high-elevation meadows and forests. This species is experiencing greater conservation threats at the southern edge of its range, so efforts to provide habitat in Oregon are especially beneficial.	**Maintain and/or recruit high-elevation conifer forest and meadow habitat.** Continue monitoring programs. Support data collection efforts to distinguish between eastern red fox and Sierra Nevada red fox.

Taxa	Species Common Name	Special Needs	Conservation Actions
Mammal	Silver-haired Bat	Silver-haired bats inhabit late-successional conifer forests. They use **large snags** and hollow trees for day, night, and maternity roosts. They may be found in other habitat types during migration.	Maintain late-successional conifer habitat. Maintain and create large-diameter hollow trees and snags. Implement impact reduction strategies (e.g., operational minimization) at wind energy facilities to reduce fatalities. Investigate other best management practices for implementation at wind energy facilities.
Mammal	Spotted Bat	Spotted bats use crevices in cliffs, caves, and canyon walls for day and night roosting. They also roost in trees adjacent to meadows at night. They typically forage in **meadows**, shrub-steppe, or along **riparian corridors and water sources**.	**Maintain open-water sources** in desert landscapes. Manage rock features, such as cliffs, to avoid conflict with recreational use and rock removal. Maintain and restore native shrub-steppe habitat.
Plant	Applegate's Milkvetch	Applegate's milkvetch occurs in flat, open, **seasonally-moist grasslands** with alkaline soils. Historically, habitat included sparse, native bunch grasses and patches of bare soil.	Continue to implement actions identified in the recovery plan, including managing and monitoring known sites. Evaluate the potential for establishing new populations in suitable habitat.
Plant	Arrow-leaf Thelypody	Arrow-leaf thelypody occurs with western junipers along streambanks, **seasonally-moist areas,** seeps, and under isolated juniper trees away from obvious moisture.	Minimize grazing at priority sites. Collect and store seeds.
Plant	Boggs Lake Hedge Hyssop	Boggs Lake hedge hyssop is found in semi-aquatic habitat. This species typically occurs in **mud or damp soils at lake edges**, generally around 5360 feet altitude. Occupied **wetlands** are often surrounded by sagebrush flats.	The only known Oregon population occurs on Bureau of Land Management lands. Monitor the existing population. Survey for suitable habitat for establishment of new populations.
Plant	Coast Range Fawn Lily	The Coast Range fawn lily is found in a variety of habitat types, including open meadows, brushland, rocky cliffs, open to closed coniferous forests, and at the **edges of sphagnum bogs**.	Survey potential habitat for new populations. Continue efforts to protect known sites and monitor populations. Collect and store seeds. Consider reintroductions.

Taxa	Species Common Name	Special Needs	Conservation Actions
Plant	Cook's Desert Parsley	Cook's desert parsley occurs in two major population centers. In Jackson County, this species is found in the Agate Desert in **vernal pools**. These pools usually range from 3-100 feet across and no more than 12 inches deep. In Josephine County, this species is found in **seasonally-wet, grassy meadows on alluvial floodplains** in the Illinois Valley, with underlying soil forming clay pan.	Maintain current populations and restore vernal pool habitat at priority sites, including Denman Wildlife Management Area. Manage road construction and maintenance projects to avoid impacts to hydrology in and around known populations.
Plant	Dwarf Meadowfoam	Dwarf meadowfoam typically grows along the edges of **deep vernal pools**. This species is associated with ancient basalt lava flows on Upper and Lower Table Rocks in Jackson County, above 1950 feet.	Minimize impacts from trail construction and maintenance. Continue population monitoring. Note: this plant occurs only on federal land.
Plant	Gentner's Fritillary	Gentner's fritillary occurs in a wide range of habitat types, including woodlands dominated by Oregon white oak, **moist riparian areas**, Douglas fir forests, and serpentine sites. This species generally prefers ecotones between meadows and open woodlands.	Minimize impacts from road maintenance and construction on existing roadside populations. Continue monitoring existing populations.
Plant	Howell's Spectacular Thelypody	Howell's spectacular thelypody occurs in low-elevation (3000-3500 feet) river valleys and moist, alkaline plains. This species is often found at the intersection of black greasewood and **riparian habitat**. Howell's spectacular thelypody **may be dependent on seasonal flooding**.	Locate protected sites in potential habitat. Create new populations. Minimize grazing and mowing during the growing season at priority locations. Control key invasive plants. Continue voluntary cooperative efforts with private landowners. Collect and store seeds.
Plant	Howellia	Howellia is typically found at the **edges of low-elevation vernal pools**, generally in shaded areas.	**Maintain or restore seasonal wetland habitat.** Control invasive plants at priority sites. Conduct surveys of potential habitat to locate additional populations. The draft recovery plan identifies additional conservation actions.

Taxa	Species Common Name	Special Needs	Conservation Actions
Plant	Kincaid's Lupine	Kincaid's lupine occurs in **seasonally-wet native prairies**.	Restore prairie habitat using site-appropriate tools (e.g., burning, mechanical removal of encroaching vegetation). Develop seed production fields for each recovery zone. Conduct long-term demographic monitoring. Conduct surveys of potential habitat to locate new populations. Limit impacts from road construction/maintenance at occupied sites.
Plant	Large-flowered Rush Lily	The large-flowered rush lily occurs in **bogs, moist, open meadows, seeps, and wetland areas**, generally at elevations of 1150-2300 feet. This species is often associated with overlying serpentine or peridotite soils. It is commonly found in open areas, with gentle slope.	Maintain California pitcher-plant bogs, which provide habitat for many rare species. Minimize water withdrawals from bog sites. Carefully manage or eliminate grazing at sites where this species occurs. Collect/store seeds, including seeds from both white and purple flowers.
Plant	Nelson's Checkermallow	Nelson's checkermallow occurs in wet and dry prairies, **wetlands**, edges of woodlands, and **riparian areas**. Remnant populations occur in roadsides and ditches.	Maintain or restore grass-dominated habitat. **Maintain or restore hydrology.** Control key invasive plants. Use mowing or prescribed fire to control brush and trees. Maintain populations in roadsides and ditches.
Plant	Oregon Semaphore Grass	Oregon semaphore grass occurs in **moist meadows and marshland**, at around 3300-5600 feet in elevation. This species is found on gravelly silt loam or clay soil inundated by slow-moving water.	Manage grazing at occupied sites. Collect and store seed. Monitor current introductions into suitable habitat on public land.
Plant	Rough Popcornflower	Rough popcornflower occurs in shaded, **seasonally-wet pools (vernal pools).**	Avoid herbicide spraying on roadside populations. Work cooperatively with private landowners to maintain rough popcornflower on private land. Acquire land with quality habitat for population creation projects. Continue monitoring of existing populations. Carefully manage grazing and fence priority sites, if necessary.

Taxa	Species Common Name	Special Needs	Conservation Actions
Plant	Western Lily	The western lily occurs in **bogs composed of damp, slightly acidic and organic soils**. This species is generally associated with small shrubs with nearby sunlight, and may use shrubs for mechanical support.	Continue current conservation efforts, such as grazing management, propagation, and experimental vegetation management (e.g., prescribed fire, mowing). **Maintain and restore bog hydrology.** Avoid herbicide application during the growing season for roadside populations and use "No Spray" signs for educational purposes.
Plant	White-topped Aster	White-topped aster occurs in open grasslands, including **seasonally-wet prairies** and oak savannah.	Maintain or restore grass-dominated habitat. Control key invasive plants. Use mowing or prescribed fire to control brush and trees. Maintain populations in roadsides and ditches. Collect and store seeds.
Plant	Willamette Daisy	The Willamette daisy is found in **seasonally-wet prairies** and drier upland prairie sites, where woody cover is nearly absent and herbaceous vegetation tends to be low in stature.	Continue prairie management where extant populations occur to maintain and expand populations. Identify suitable protected sites for introductions. **Maintain or restore hydrology.** Control invasive and woody plants through use of well-timed mowing, prescribed fire, and selected herbicide use, as appropriate. Collect seeds for storage and grow out for outplanting.
Reptile	Western Painted Turtle	Western painted turtles inhabit **marshy ponds, small lakes, slow-moving streams, and quiet off-channel portions of rivers**. They prefer **waters with muddy bottoms and aquatic vegetation**. Western painted turtles use open, sparsely-vegetated and sunny ground for nesting. They require sunny logs/vegetation for basking and safe movement corridors between aquatic and terrestrial habitat.	Provide basking structures and nesting habitat. Control invasive plants and animals. Protect important nesting sites from disturbance. Use wire cages to protect nests from raccoons at key sites in the short-term where this is a problem. Implement the Oregon Department of Fish and Wildlife's Turtle Best Management Practices. Prevent illegal collection. Prevent release of pet turtles. Reduce risk of mortality from roads.

Taxa	Species Common Name	Special Needs	Conservation Actions
Reptile	Western Pond Turtle	Western pond turtles are found in **marshes, streams, rivers, ponds, and lakes**. They use sparsely-vegetated ground nearby for digging nests and moist, shrubby or forested areas for aestivation and over-wintering. They require sunny logs/vegetation for basking and safe movement corridors between aquatic and terrestrial habitat.	Identify population centers. Use distribution data to establish priority areas for protection and management. Provide basking structures and nesting habitat. Control invasive plants and animals. Minimize disturbance in nesting areas. Protect adjacent upland habitat. Implement the Oregon Department of Fish and Wildlife's Turtle Best Management Practices. Prevent illegal collection. Prevent release of pet turtles. Reduce risk of mortality from roads.