

Rails

As spring melds into summer and day melds into night, Eastern Oregon marshes present an ever-changing procession of sounds: Pacific treefrogs croak a squeaky chorus; Wilson's snipe perform spiral display flights with whistling wings; common nighthawks end diving flights with a "boom;" and rails reveal their grassy hiding places by clicks, clucks or grunts. Oregon's wetlands are home to three species of rails, all of which are extremely secretive. Stubby tails, short round wings, and a narrow body allow rails to move quietly through marsh vegetation. They generally stay close to hiding cover as they hunt for invertebrates and other foods.



Because rails are secretive and most active at dusk and dawn, they are best identified by their breeding calls. The

Virginia rail's breeding call is a repeated "ki-dic ki-dic;" the sora's call sound like "ker-wee" or "kooEE;" and the yellow rail's "tic-tic tic-tic-tic" is reminiscent of tapping two

pebbles together. Both Virginia rails and sora are common in freshwater and brackish marshes throughout Oregon, but the yellow rail is one of the state's rarest breeding birds. Yellow rails breed in shallow freshwater wetlands, particularly in flooded sedge meadows. In Oregon, they have a narrow distribution within Klamath and Lake Counties and occur in suitable habitats at 4,100 – 5,000 feet in elevation. They primarily build their nests under domes of the previous year's plant growth, called senescent vegetation. The total Oregon population is estimated to be less than 300 birds, which may represent 50 percent of the entire western United States breeding population. Yellow rail populations have been impacted by wetland loss and degradation. They can be sensitive to habitat changes such as drying due to a lowered water table, too much flooding, or loss of senescent vegetation. They will colonize restored wetlands, so wetland conservation and restoration will ensure that some of Oregon's marshes still "tic" with the call of the yellow rail.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Acorn woodpecker (<i>Melanerpes formicivorus</i>)	WV	Oak woodlands with a high canopy and relatively open understory; dead limbs or snags for storing acorns	Loss of oak woodlands in Willamette Valley. Small, localized populations. Competition for nesting cavities from European starlings. Colonial.	Nesting ecology, especially nest site requirements	Work with private landowners to maintain and restore oak woodlands with open understories, especially large patches; maintain snags and older trees with dead limbs
Aleutian Canada goose (<i>Branta canadensis leucopareia</i> ; Semidi Island population only)	CR	In Oregon: coastal grass-dominated fields/pastures for foraging and offshore islands for roosting	This species declined historically due to non-native predators (foxes) in breeding areas of Alaska. Semidi Island breeding population has still not fully recovered. Currently in Oregon, there is a small migrant and wintering population. Currently, foraging sites are limited and occur on private land.	Estimated population size; specific migration route; use areas in the Lower Columbia River	Aleutian Canada Goose Recovery Plan provides information on conservation strategies. Use incentives and cooperative approaches to manage foraging habitat on private land. [Notes: AOU name is Aleutian cackling goose, <i>Branta hutchinsii leucopareia</i> . This species was removed from the federal threatened list in 2001 and removed from the Oregon state endangered species list in 2005. Although the primary limiting factors occur outside of Oregon, providing wintering habitat can contribute to this species' conservation.]
American bald eagle (<i>Haliaeetus leucocephalus</i>)	CR	Associated with large water bodies (rivers, lakes, ocean) which support fish populations and have large trees for nesting nearby; variable habitat for wintering based on food availability	Poor reproduction in the lower Columbia estuary which has been linked to contaminants; loss of large nesting trees	Sources of contaminants and methods to reduce/mitigate for contaminant levels (e.g., do organochloride pesticide residues remain in bottom sediments?); impacts of bald eagles on breeding seabird and great blue heron colonies where eagle populations are increasing	Continue to monitor eagle productivity and contaminant levels present in fish in the Lower Columbia; maintain large trees near suitable feeding habitat.
American peregrine falcon (<i>Falco peregrinus anatum</i>)	CR NBR	Rock cliffs for nest sites; uses offshore rocks and islands in Coast Range ecoregion	Eggshell thinning caused by organochlorine pesticides (e.g., residual DDT in Oregon's environment and possibly concentrated by prey wintering in Central and South America). Human disturbance at nests. Reductions of prey populations	Relationship between wintering locations of Oregon breeders and contaminant levels	The federal monitoring plan provides information on management and conservation actions for this formerly listed federal species. Note: Although the American peregrine falcon has been down-listed from the federal endangered species list, it has not met recovery goals in southeast Oregon.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
American three-toed woodpecker (<i>Picooides dorsalis</i>)	BM EC	Found in forested habitats usually above 5,000 ft.; dead trees with heartrot for nesting and high densities of wood-boring beetles for foraging; often associated with large-scale forest disturbances that produce a high density of snags (e.g., forest fires, disease pockets and bark beetle outbreaks)	Small, often disjunct populations. Specific habitat requirements. Reductions in snag availability due to fire suppression and forest health management	Estimated population size and trends. Habitat relationships. Nesting ecology.	Maintain areas of high snag density especially above 5,000 feet where compatible with other forest objectives (e.g., maintain bark beetle infested trees in areas of low risk of insect infestation into adjacent forests)
American white pelican (<i>Pelecanus erythrorhynchos</i>)	NBR	Isolated and sparsely vegetated terrestrial nesting habitat associated with lakes and freshwater marshes; shallow water areas for cooperative feeding	Specialized nesting and foraging habitat subject to droughts, floods, and manipulated water levels; sensitive to human disturbance and mammalian predators at nest sites; colonial nester; small, disjunct populations	Identification of landscape-level breeding and post-breeding habitat needs for responding to annual site-specific changes in water levels	Minimize human disturbance in nesting areas during breeding season and in shallow feeding areas. Where appropriate, manage water levels to provide suitable foraging and nesting habitat.
Band-tailed pigeon (<i>Patagioenas fasciata</i>)	CR WC	Mineral sites; large conifer forest landscape with a variety of forest stand age and structure	Reductions in quality and quantity of mineral sites. Large area requirements. Disease.	Opportunities to enhance/create mineral sites. Distribution of nesting sites. Habitat needs. Reasons for declining trends.	Maintain existing mineral sites. Maintain, plant or otherwise manage for elderberry, cascara and other food plants
Barrow's goldeneye (<i>Bucephala islandica</i>)	EC WC	High-elevation lake or pond habitat with abundant invertebrate prey and surrounded by forests; snags or live trees with cavities for nest sites nearby; loafing sites (logs and rocks)	Relatively small breeding populations; at southern end of ranges; narrow habitat requirements (suitable snags in conjunction with suitable water bodies)	Water body characteristics suitable for nesting; impact of human recreation on nesting; variables associated with nest box use and effectiveness of nestboxes as a conservation measure	Maintain and/or create snags close to mountain lakes. Nest boxes can be used as a short-term strategy to establish and/or expand populations

Lewis' Woodpecker

Oregon is home to an interesting variety of woodpeckers, 12 species in all. Named for the famous explorer, Lewis' woodpecker is one of the more unusual of Oregon's woodpeckers. Lewis' woodpecker is striking in appearance, with an iridescent greenish-black back, gray collar and breast, rosy belly, and crimson face. Its diet varies throughout the year. In the spring, Lewis' woodpeckers feed upon insects, especially carpenter ants, bees, wasps, mayflies, beetles, and grasshoppers. Unlike most of Oregon's woodpeckers, Lewis' woodpecker does not hunt insects by drilling holes into wood or flaking off bark. Instead, they often sit on branches, snags, fence posts or telephone posts and fly out to catch insects. They also perform acrobatic maneuvers when hunting in the midst of an insect swarm. In the fall, they feed on fruits such as elderberry, currant, serviceberry,

poison oak, and ash. They store acorns for their winter food by shelling and breaking the nuts and then caching the pieces in wood cracks and bark crevices.

Like all woodpeckers, Lewis' woodpeckers nest inside tree cavities. However, unlike most woodpeckers, Lewis' woodpeckers generally do not excavate their own nest holes. Instead, they use old cavities created by northern flickers and hairy woodpeckers. Open oak, ponderosa pine, and riparian cottonwood woodlands provide Lewis' woodpeckers with the combination of tree cavities and diverse food sources they need during the spring and summer. They usually spend the winter in oak habitats and often move around in response to acorn crops.

Lewis' woodpeckers were once widespread and abundant in Oregon, but have declined dramatically since the 1950's. The decline is thought to be due to loss of all three woodland types, and in particular loss of large-diameter nest and food storage trees; competition for nest cavities from introduced starlings; and a reduction in insect populations. The oak woodlands east of Mount Hood provide some of the state's last major nesting areas for Lewis' woodpecker. They also are easily viewed on ODFW's White River Wildlife Management Area. By maintaining and restoring open oak, ponderosa pine, and riparian cottonwood habitats and by managing snags, Oregonians can help bring back this colorful woodpecker.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Black brant (<i>Branta bernicla nigricans</i>)	CR	Eelgrass and sea lettuce beds for foraging in areas with limited human disturbance	Small wintering population that has been declining. Loss and degradation of eelgrass beds. Human disturbance activities in preferred foraging areas.	Effects of habitat quality at spring staging sites on reproductive fitness and success; historic and current abundance of submerged aquatic vegetation in Oregon's primary estuaries	Maintain existing eelgrass beds from degradation and human disturbance. Restore eelgrass beds to enhance quality and quantity; work with partners in Pacific Flyway Council to manage sport harvest timing and/or levels to minimize impacts to wintering populations
Black oystercatcher (<i>Haematopus bachmani</i>)	CR	Rocky coastal habitats with sufficient intertidal invertebrate prey	Small breeding/wintering population. High vulnerability to potential oil spills. Increased human activity and development near nesting sites	Impact of human disturbance on nesting and foraging; wintering ecology	Identify high priority sites.
Black swift (<i>Cypseloides niger</i>)	WC	Waterfalls with open access, limited light, and crevices/ledges for nest sites	Small and disjunct populations in discrete and unique nesting habitat	If waterfall nest sites (crevices and ledges) limit populations; survey potential sites to determine nesting sites	Maintain low disturbance at nesting waterfalls
Black-backed woodpecker (<i>Picoides arcticus</i>)	BM EC	Found in forested habitats usually above 5,000 ft; needs dead trees with heartrot for nesting and high densities of wood-boring beetles for foraging; often associated with large-scale forest disturbances that produce a high density of snags (e.g., forest fires, disease pockets and bark beetle outbreaks)	Small, often disjunct populations. Specific habitat requirements. Reductions in snag availability due to fire suppression and forest health management	Estimated population size and trends. Habitat relationships. Nesting ecology.	Maintain areas of high snag density in wildfire and other disturbance areas, especially above 5,000 feet, where compatible with other forest objectives (e.g., maintain bark beetle infested trees in areas of low risk of insect infestation into adjacent forests)
Black-necked stilt (<i>Himantopus mexicanus</i>)	NBR	Alkaline or freshwater ponds with extensive shallow water areas for foraging	Specialized nesting habitat at edge of water; nesting habitat is subject to droughts and floods; moves in response to water levels; colonial nester	Identification of landscape-level breeding and post-breeding habitat needs for responding to annual site-specific changes in water levels	Maintain suitable nesting and foraging areas across the landscape to provide habitat regardless of annual variation in precipitation and water levels
Blue-gray gnatcatcher (<i>Polioptila caerulea</i>)	KM	Scattered oak trees within a brushy chaparral community	Small population. Common cowbird host. Loss of chaparral habitat for fire hazard control	Complete population inventory. Impacts of cowbird parasitism. Impacts of fragmentation of habitat	Work with private landowners to maintain or restore low-elevation chaparral habitat, especially larger patches
Bobolink (<i>Dolichonyx oryzivorus</i>)	BM NBR	Broad leaf forbs (e.g., clover, alfalfa, false lupine, potentilla) for nesting cover and insect resources	Population declines; small scattered, colonial populations, many on private land; sensitivity to water and some agricultural practices	Annual population monitoring; possible impact of cowbird parasitism and corvid predation on small populations	Partnerships with private landowners to manage habitat: remove residual vegetation and stimulate new growth prior to breeding season; seasonally flooded meadows (prior to breeding season); delay field maintenance (e.g., mowing, haying) until after the breeding season

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Brewer's sparrow (<i>Spizella breweri</i>)	CP	Sagebrush shrubland with canopy height less than 5 ft. Often associated with big sagebrush; also utilizes a variety of shrub habitats. Nest in thick crowns or low in brush, or in clumps of grass.	Reduction and fragmentation of suitable nesting habitat. Cheatgrass invasion.	Taxonomy. Distribution of subspecies in Oregon.	Maintain suitable shrub habitats for breeding. Maintain connectivity among habitat patches.
Bufflehead (<i>Bucephala albeola</i>)	EC WC	High-elevation lake or pond habitat with abundant invertebrate prey and surrounded by forests; snags or live trees with cavities for nest sites nearby; loafing sites (logs and rocks)	Relatively small breeding populations; at southern end of ranges; narrow habitat requirements (suitable snags in conjunction with suitable water bodies)	Water body characteristics suitable for nesting; impact of human recreation on nesting; variables associated with nest box use and effectiveness of nestboxes as a conservation measure	Maintain and/or create snags close to mountain lakes. Nest boxes can be used as a short-term strategy to establish and/or expand populations
California brown pelican (<i>Pelecanus occidentalis californicus</i>)	CR	Near-shore pelagic habitat for foraging; offshore rocks and islands, inaccessible headland areas, sandy islands, and sand spits for roosting	Forage fish availability; high potential vulnerability to oil spills	Diet; roosting ecology; effects of human disturbance	Maintain suitable conditions at known roosting sites
Caspian tern (<i>Sterna caspia</i>)	CR	Unvegetated nesting islands free of mammalian predators	Requires long-term availability of suitable nesting sites. Colonial-nesting so vulnerable to random, human-induced or natural events	Predation levels on various groups of salmonids	The USFWS Status Assessment and Conservation Recommendations Plan provides information on appropriate conservation actions for this non-listed species
Chipping sparrow (<i>Spizella passerine</i>)	WV	Open areas of herbaceous understory for foraging in understory of oak woodlands	Declining populations; loss and degradation of oak woodland habitats due to development, loss of natural fire regimes and invasive encroachment in understory; possibly cowbird parasitism	Effects of cowbird parasitism on productivity; effects of feral cats in residential nesting areas, and agricultural management in agricultural areas (e.g., orchards)	Maintain areas of open herbaceous understory in oak woodlands; control key invasive plants

Upland Sandpiper

The upland sandpiper is a medium-sized shorebird with long legs and a short bill. One of Oregon's rarest breeding birds, they occur in Oregon as a small, disjunct population, separate from the main populations east of the Rocky Mountains. They are very secretive except during the breeding season when they perform theatrical courtship flights over their nesting areas in high-elevation meadows.

Their breeding meadows vary in size and type, but are often surrounded by lodgepole or ponderosa pine forests, are near a stream, and have wildflowers and other forbs. Uncontrolled shooting in the late 1800's and habitat loss led to historic population declines. Currently, conifer encroachment into meadows, the use of herbicides to control forbs, and overgrazing of some meadows in spring and summer

may be affecting their populations. Upland sandpipers are no longer thought to occur in Washington, and Oregon's populations have declined from approximately 80 birds in 1984 to about 20 by the early 1990's. A thorough inventory of all potential habitat, habitat research, and appropriate management projects are needed to ensure that Oregon doesn't lose this unique species.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Common nighthawk (<i>Chordeiles minor</i>)	WV	Gravel bars and other sparsely vegetated grasslands for nesting; aerial insectivore prey base for foraging	Loss of nesting habitat, increased predation by corvids, gulls and house cats; reduction in prey base (aerial insects)	Inventory of gravel bars along large rivers for nesting birds	Maintain sparsely vegetated grassland patches, restore riparian and wetland habitats for insect prey base
Dusky Canada goose (<i>Branta canadensis occidentalis</i>)	WV	Adequate food resources (high quality, high protein herbaceous plants) in sufficient spatial and temporal distribution to sustain migratory and wintering population.	Decline in this species is primarily due to poor reproduction in its breeding range in Alaska. However, this species winters in Oregon, so Oregon can contribute to its conservation. Currently, wintering habitat is being lost due to conversions from farmland to developed areas. Also, its use of private lands limits management options.	Effects of habitat loss on movements and use of private lands.	Information on conservation strategies is available in the Pacific Flyway management plan and Conservation Assessment for the Dusky Canada Goose (USFWS)
Ferruginous hawk (<i>Buteo regalis</i>)	BM CP NBR	Uses open, grassy habitats with scattered shrubs or trees, including grassland and sagebrush steppe; large area requirements; suitable nest sites in scattered juniper trees, in cottonwood trees near small streams, or on rocky sites with an expansive view; also nests on rimrock or on undisturbed ground	Populations fluctuate based on prey availability; sensitive to human disturbance during the nesting season; loss of mature juniper trees in suitable nesting areas; conversion of juniper savanna to juniper woodland in some areas due to fire suppression	Relationships with prey species, especially in agricultural landscapes; impacts of wind turbines in Columbia Plateau	Provide diverse herbaceous and low shrub vegetation to support prey populations (jackrabbits and ground squirrels); maintain known and potential nestsite trees (mature juniper); minimize human disturbance (including rodent control and chemical applications) within 0.6 miles of active nest sites from March 5 – June 15; work cooperatively with agricultural landowners to maintain average field size <40 ac and >25% of nesting areas natural vegetation at priority sites
Flammulated owl (<i>Otus flammeolus</i>)	BM EC	Requires small patches of dense thickets for roosting; small openings of grasslands or dry meadows for foraging on insect prey; medium to large snags and defective trees with existing woodpecker cavities	Habitat degradation from encroaching trees and shrubs; loss of mature ponderosa pine trees and snags; lack of recruitment of young ponderosa pine; insect control may affect prey base; snag/cavity abundance (because this species is the last cavity-nesting migrant to return)	Thorough inventory of distribution; impacts of forest management practices and habitat suitability of managed forests; basic nesting ecology and habitat use	Retain existing or manage to meet conditions of mature woodland and forest (>1 snag/1 acres >20 in dbh ¹) in areas with > one large or two small sapling thickets and > one large or two small grassy openings; minimize insect control near known sites; monitored nest box programs in snag-deficient areas to provide cavity habitat in the short term
Fork-tailed storm-petrel (<i>Oceanodroma furcata</i>)	CR	Coastal islands with deep sandy soil for burrowing amid ground cover vegetation	Small population; vulnerability of specialized nesting habitat to predation from non-native and artificially abundant native predators; high potential vulnerability to oil spills	Diet; breeding biology; foraging areas	Maintain existing closure of nesting areas to human visitation; continue implementing Environmental Assessment for mammalian predator control at Oregon seabird colonies
Franklin's gull (<i>Larus pipixcan</i>)	NBR	Relatively large marsh habitat with both emergent vegetation for nesting and deep water (to ensure foraging habitat through breeding season and to prevent access to nests by predators)	Small, disjunct breeding population; specialized nesting habitat; sensitivity to nesting disturbance and fluctuating water levels	Factors influencing dependence on upland foraging versus marsh foraging (e.g., marsh size, characteristics). Identify landscape-level breeding and post-breeding habitat needs for responding to annual site-specific changes in water levels	Minimize human disturbance in nesting areas during breeding season and in shallow feeding areas. Where appropriate, manage water levels to provide suitable foraging and nesting habitat.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Grasshopper sparrow (<i>Ammodramus savannarum</i>)	CP KM WV	Dry grassland habitat with low to moderate grass height and low percent shrub cover	Small, disjunct populations; loss of grassland habitats due to conversion and shrub/tree encroachment; nesting failure due to timing of land use practices (e.g., mowing, haying, spraying).	Complete population inventory and habitat evaluation; effects of habitat patch size on abundance and productivity; effectiveness of planting mixtures to favor this species; impact of grazing and agricultural management on productivity	Maintain or restore grassland habitat; increase plant diversity for greater insect diversity; maintain high percent native grass cover and <10% shrub cover in patches > 20 acres; delay mowing and other field management until after July 15 at known nesting areas; control key invasive plants
Great gray owl (<i>Strix nebulosa</i>)	BM EC	Late successional forests for nesting with nearby grassy openings for foraging; requires large-diameter snags or suitable branch structure (e.g., brooms from mistletoe) for nesting	Has large area requirements; is affected by reductions in amount of late successional forest and montane grasslands	Value of harvested forest openings as foraging habitat; effects of rodent control	Maintain late successional forest; maintain natural meadow forest openings through prescribed fire, thinning and hand-removal of encroaching conifers
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	BM NBR	Require large areas of contiguous sagebrush habitat including a mosaic of conditions; wet meadows and playas during brood rearing, especially areas with native forbs	Population declines and local extirpations; disjunct populations; habitat loss and fragmentation; juniper expansion into sagebrush; impact on sagebrush of increased fire frequency and intensity because of invasive annual plants; dependence on specific conditions for suitable lek sites; human disturbance at lek sites	See detailed presentation in Greater Sage-Grouse Conservation Assessment and Conservation Strategy for Oregon (in preparation, 2005)	See detailed presentation in Greater Sage-Grouse Conservation Assessment and Conservation Strategy for Oregon (in preparation, 2005)

Red Crossbills

A bird's primary tool for finding and handling food is its beak. Depending on the type of bird, a beak (also called a bill) may serve as a spear, probe, net, knife, strainer, nut-cracker, pliers, or drill. Of Oregon's birds, the red crossbill has one of the most unusual and interesting beaks. As the bird's name implies, the upper and lower halves of the beak cross at the tip. Using the cross like a lever, the crossbill can pry seeds from partly-opened cones more efficiently than any other bird. Red crossbills primarily eat Douglas-fir, spruce, hemlock and pine seeds, but will occasionally eat deciduous leaf buds, alder cones, and insects. Red crossbills are thought to include several "groups" with slightly different bills that enable them to exploit variation in seed sizes.

Because of their specialized diet, red crossbills are highly dependent on conifer seed crops.

Like most trees that produce seeds, conifers periodically have heavy seed crops. This phenomenon is called "mast-ing" and ensures that enough seeds escape seed predators (such as insects, birds and rodents) to allow adequate tree germination. For example, ponderosa pine, which produces a cone crop every 2-3 years, produces a particularly heavy crop every 8-9 years. Red crossbills respond to variable food availability by being highly nomadic, moving across the landscape in search of seeds. They travel in flocks of a few to several hundred. Depending on the local seed crop,

they can be locally common or completely absent from an area. Red crossbills breed in mature conifer forests because of the larger cone crops associated with older trees. The timing and success of crossbill reproduction is closely tied to seed availability. As a result of their food-based movements, crossbills need a mosaic of older forest types across watersheds. Some wildlife species travel across many habitats and require a landscape approach to conservation. Cooperative large-scale approaches such as watershed-based efforts can benefit crossbills and other landscape species with wide ranges, including forest carnivores, salmon, bats, and migratory birds.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Greater sandhill crane (<i>Grus canadensis tabida</i>)	EC NBR WC	Relatively large wetland-wet/dry meadow complexes with a mosaic of aquatic and herbaceous conditions for nesting and foraging	Large area requirements. Sensitive to disturbance. Reductions in wetland/wet meadow quality, quantity, and size due to hydrological changes, succession (shrub and conifer encroachment), and/or livestock grazing. Nesting failure due to timing of land management practices (e.g. mowing, grazing). Coyote predation on young. Raven predation on eggs.	Habitat area requirements relative to the quality of the habitat. Difference in food resource utilization in wet and dry meadows and at different breeding sites. Effects of pesticides on food resources. Impact of livestock grazing on habitat suitability; impact of nest predation under different habitat conditions; impacts from disturbance due to recreational use (e.g., OHVs)	Maintain and/or enhance hydrological conditions to support suitable habitat conditions for nesting and foraging in tracts >20 ac. Where hydrology can be managed, include both wet and dry meadow habitat through the nesting season. Minimize disturbance during breeding season (4/15 - 7/31) at known nesting areas. Use prescribed burning or hand-felling of trees periodically to set plant succession.
Juniper titmouse (<i>Baeolophus ridgwayi</i>)	NBR	Mature juniper trees with cavities for nesting; expansive areas of mature juniper habitat, especially in winter	Small, disjunct populations; reduction and fragmentation of stands of mature juniper trees from development, wildfire, or juniper management	Distribution and estimated population size and status; habitat patch size requirements for a population, especially in winter	Maintain large stands of mature juniper within the species range; maintain mature juniper trees when thinning encroaching small juniper trees (see information about juniper age composition in Blue Mountains ecoregion and Limiting Factors section)
Leach's storm-petrel (<i>Oceanodroma leucorhoa</i>)	CR	Coastal islands with deep sandy soil for burrowing and cover of the grass <i>Phalaris</i> and other grass and forb species	Specialized nesting habitat; vulnerability of specialized nesting habitat to predation from non-native and artificially abundant native predators; high potential vulnerability to oil spills; vulnerability to plastic ingestion due to surface foraging behavior	Breeding biology; foraging areas	Maintain existing closure of nesting areas to human visitation; continue implementing Environmental Assessment for mammalian predator control at Oregon seabird colonies
Lewis' woodpecker (<i>Melanerpes lewis</i>)	BM CP EC KM	This species has 5 major habitat types: ponderosa pine, oak woodlands, oak-pine woodlands, cottonwood riparian forests, and areas burned by wildfires. In all cases, special needs are aerial insect populations for foraging; large snags for nesting, especially soft or well-decayed snags; and relatively open canopy for flycatching	Population declines and local extirpations; habitat loss and degradation; loss of old cottonwood snags; competition from starlings for nest cavities; large areas of suitable habitat on private lands	Thorough inventory of distribution and analysis of habitat relationships; impact of grazing on insect productivity in undergrowth; determine usefulness of providing nest-boxes	Maintain or restore open oak, ponderosa pine, and cottonwood woodlands along with post-fire ponderosa pine habitats that provide canopy cover <40% and shrub cover 30-80% with 6 trees/acre > 32 feet tall and 6 snags/acre > 20 in dbh
Little willow flycatcher (<i>Empidonax traillii brewsteri</i>)	WV	Brushy patches of vegetation adjacent to water for nesting and foraging	Declining populations; loss of riparian shrub habitat	Prey base requirements and site selection relative to prey base	Restore brushy patches of willow and other native shrubby habitats near water
Loggerhead shrike (<i>Lanius ludovicianus</i>)	BM CP	Tall sagebrush for nesting and roosting and openings with grasses and significant bare ground for foraging	Habitat loss; population declines; loss of sagebrush to high intensity wildfires	Post-fledging survivorship as a function of habitat quality; impacts of pesticide use on prey base, especially grasshoppers	Maintain late seral sagebrush with patches of tall shrubs (>1m) with <15% shrub cover, <20 herbaceous cover, and >30% open ground cover

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Long-billed curlew (<i>Numenius americanus</i>)	CP NBR	Open habitats with relatively short grass and few or no trees/shrubs. In Northern Basin and Range ecoregion, much of the suitable habitat is comprised of sub-irrigated meadows created by adjoining flood irrigated meadows.	Historic habitat loss and continued conversion of grassland habitats to agriculture; population declines in some areas; human disturbance during nesting	Nest success and viability of populations nesting in agricultural fields; impact of human disturbance and land-use practices; post-fledging habitat use and survival	Partnerships with private landowners to maintain and restore large patches of short grass habitat. For example, ranching has provided much habitat for this species (<i>i.e.</i> , Lower Silvie's River Valley). Minimize human disturbance during Mar 15 - July 1 at known nesting areas
Marbled murrelet (<i>Brachyramphus marmoratus</i>)	CR KM	Late-successional forest with specific nest tree characteristics	Reductions in late-successional forest. Low reproductive output combined with low reproductive success. Habitat loss due to uncharacteristically severe fire in Klamath Mountains ecoregion	Role of isolation and/or fragmentation of nesting habitat with levels of nest predation. Minimum area requirements.	The Northwest Forest Plan and Federal and State Recovery and Conservation Plans provide information on network of conservation reserves and management requirements for this listed species
Mountain quail (<i>Oreortyx pictus</i>)	NBR	Shrubby riparian habitats and adjacent to grassy uplands	Range retractions and local extirpations; small, disjunct populations	Wintering habitat requirements	Partnership programs with private landowners to maintain and/or provide suitable habitat; coordinate riparian restoration with management of suitable adjacent uplands
Northern goshawk (<i>Accipiter gentiles</i>)	EC WC	Large area requirements with a mosaic of forest stages, forest openings, and habitat components (<i>e.g.</i> , snags, down logs); open forest floor for access to ground dwelling prey	Large area requirements. Affected by reductions in amount of late successional forest	Estimated population densities	Maintain late successional forest habitat. Maintain natural forest openings through prescribed fire, thinning and hand-removal of encroaching conifers

Western Meadowlark

In 1927, Oregon's school children voted the western meadowlark as the State Bird. Meadowlarks' bright, cheerful colors, beautiful songs, and common appearance in farm and ranch lands endear them to many Oregonians. Due to habitat loss, they are no longer common in some parts of Oregon and have become particularly rare in the Willamette Valley. Other



grassland birds, such as western bluebird, Oregon vesper sparrow, horned lark, grasshopper sparrow, and common nighthawk, also need open grassy areas to feed and raise their young. Along with the meadowlark, these species are declining in numbers. Grassland birds eat insects, and can serve a role in reducing economically harmful insect populations. Fortunately, most of the grassland birds can live alongside people if

certain habitat features are provided, such as increased herbaceous plant diversity. Landowners can also help grassland birds by timing field maintenance either before or the breeding season and by reducing impacts by free-roaming cats. Fallow fields, lightly-grazed pastures, grass seed fields, vineyards, and Christmas tree farms can provide habitat for grassland birds and some other wildlife.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Northern spotted owl (<i>Strix occidentalis caurina</i>)	CR KM WC	Late successional forest or younger forest with residual late successional components	Declining. Large home range requirements. Reductions in late successional forest. Hybridization with and competition from barred owl. Sensitive to West Nile Virus. Habitat loss due to uncharacteristically severe fire in Klamath Mountains ecoregion.	Status of populations in landscapes managed for timber production (<i>i.e.</i> , where retention of trees and snags was practiced). Minimum area requirements.	The Northwest Forest Plan and Federal and State Recovery and Conservation Plans provide information on network of conservation reserves and management requirements for this listed species
Olive-sided flycatcher (<i>Contopus cooperi</i>)	CR EC WC	Open older coniferous forest, forested riparian habitat, forest openings (<i>e.g.</i> , burns, harvested forest), or forest edge with tall, prominent trees and/or snags; hemlocks or true firs for nest trees	Relatively large area requirements (compared to other songbirds). Increased predation rates in harvest units within a landscape of older forest or highly fragmented forests	Comparison of prey resources and reproductive success in burns and harvested forest and within various harvest types	Maintain scattered large dead trees in patchy wildfires; maintain natural openings but minimize harvested forest openings within landscapes of older forest
Oregon vesper sparrow (<i>Poocetes gramineus affinis</i>)	KM WV	Grasslands for foraging and nesting, usually with scattered shrubs/trees and some bare ground	Small disjunct populations; loss and degradation of grassland habitats due to invasive plants and lack of fire; Nesting failure due to timing of land management practices (<i>e.g.</i> mowing, haying, spraying), predation by house cats in some areas	Impact of grazing and agricultural management on productivity	Maintain or restore grassland habitat, increase plant diversity for greater insect diversity, control key invasive plants, minimize disturbance during breeding season (4/15 - 7/15) at known nesting areas.
Pileated woodpecker (<i>Dryocopus pileatus</i>)	BM	Mixed coniferous forests, especially late successional stands; large-diameter trees and snags for nest and roost sites; large-diameter snags and logs for foraging sites	Habitat fragmentation; reductions in snag availability due to fire suppression and forest health management	Habitat suitability of managed forests with large dead wood maintained	Maintain and create large-diameter hollow trees, snags, and logs during forest management activities
Red-necked grebe (<i>Podiceps grisegena</i>)	EC	Large lakes and ponds within a forested landscape; needs both deep water and marshy emergent vegetation for nesting and foraging habitat	Small isolated population. Susceptibility to pesticide impacts on reproduction. Needs high water quality with diverse invertebrate and fish prey resources	Impacts of recreational boating on reproduction. Sources of water quality degradation at nesting site(s)	Maintain and restore marshy vegetation. Minimize disturbance to nest sites during nesting season
Rock sandpiper (<i>Calidris ptilocnemis</i>)	CR	Rocky coastal habitats with sufficient intertidal invertebrate prey	Small migrant/wintering population and regional declines. High vulnerability to potential oil spills	Basic wintering ecology. Impact of human disturbance on population distribution and health.	Identify high priority sites.
Sage sparrow (<i>Amphispiza belli</i>)	CP	Primarily occurs in big sagebrush communities; requires high shrub cover and low grass and litter cover in relatively large patches	Sensitive to fragmentation; negative association with densely growing annual invasive plants such as cheatgrass; loss of sagebrush to high intensity, high frequency wildfires because of invasive grasses; sensitive to grazing	Area requirements; conditions to maintain source populations; effects of cowbird parasitism	Maintain sagebrush cover at 10-25% and height > 20in, with <10% invasive annual grasses, and open ground cover >10% in patches >400 acres where possible
Short-eared owl (<i>Asio flammeus</i>)	WV	Large expanses of marshes and wet prairies for foraging and nesting.	Loss of large expanses of wetland (marsh and wet prairie) habitat. Small population. Nests and comunally roosts on ground, which makes species vulnerable to disturbance.	Complete breeding season inventory of suitable nesting habitat. Habitat relationships of breeding and wintering birds.	Maintain and restore wetland habitats, with an emphasis on maintaining large patches and/or expanding smaller ones. Minimize disturbance at known communal roost sites.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Slender-billed (white-breasted) nuthatch (<i>Sitta carolinensis aculeate</i>)	WV	Mature oak trees for foraging and nesting cavities	Fewer mature oaks, fewer cavities	Patch size requirements	Maintain large oaks >22 in. dbh., develop nest box programs for cavity habitat in the short-term
Snowy egret (<i>Egretta thula</i>)	NBR	Tree, shrub, or stout herbaceous vegetation such as hardstem bulrush for nest sites	Small, disjunct populations; declining population trends; colonial nester; sensitive to human disturbance	Factors contributing to and effects from competition with other herons and egrets, especially non-native cattle egrets	Minimize human disturbance in nesting areas during breeding season
Streaked horned lark (<i>Eremophila alpestris strigata</i>)	WV	Open, treeless expanse of sparsely vegetated grassland areas (including bare ground patches) for nesting and foraging	Declining populations; Loss and degradation of grassland habitat; Nesting failure due to timing of land management practices (e.g. mowing, haying, spraying).	Identification of factors limiting nest success and post-fledgling survival; habitat relationships of wintering birds	Maintain or restore sparsely vegetated grassland habitat, create nesting areas, increase plant diversity for greater insect diversity, control key non-native plants; designate locations to be managed for core populations; minimize disturbance during breeding season (4/15 - 7/15) at known nesting areas
Swainson's hawk (<i>Buteo swainsoni</i>)	CP NBR	Expansive open grassland habitat with occasional suitable nest trees and adequate small mammal prey populations	Declining populations; relatively large area requirements; habitat loss and fragmentation; mortality on South American wintering grounds due to improper pesticide use	Factors contributing to and effects from competition with red-tailed hawks, particularly in areas where nest trees or prey base is limited by habitat degradation	Partnerships with private landowners; protection of nest trees; maintain herbaceous conditions to support adequate abundance and diversity of small mammal and insect prey. (Note: Winter ground issues are being addressed through international cooperation).
Tufted puffin (<i>Fratercula cirrhata</i>)	CR	Coastal nest sites that are inaccessible to mammals and have steep slopes and deep soil for burrowing	Declining populations. Vulnerability of specialized nesting habitat to impacts from humans and introduced predators. High potential vulnerability to oil spills	Factors contributing to declining populations: marine or other factors?	Maintain existing sites free from introduced predators and levels of human disturbance that negatively impact nesting success
Upland sandpiper (<i>Bartramia longicauda</i>)	BM	Large breeding area requirements; wet and dry meadows in small valleys such as Logan Valley, Bear Valley and around Ukiah; medium-length grasses with high plant diversity; current habitat includes nearby lodgepole pine and sagebrush	Very small, disjunct populations; encroachment of meadows by lodgepole pine (possibly due to fire suppression and/or changes in water distribution)	Thorough inventory of distribution; analysis of habitat relationships and requirements; relationship between land use and habitat suitability	Partnerships with private landowners to determine and implement appropriate conservation on suitable habitat patches; remove encroaching lodgepole pine trees in meadows

Flammulated Owl

Petite stature, exclusively insect prey, and migratory habits make the flammulated owl unique among northwestern owls. One of the smallest owls in North America, the flammulated owl weighs just under 2 ounces. Unlike most of Oregon's owls which are year-round residents, the flammulated owl migrates to Mexico and Central America for the winter. This small owl is closely associated with older

ponderosa pine woodlands, but is sometimes found in dry mixed ponderosa-conifer stands. Thickets of small trees are important for roosting habitat, and open understories, small openings, or meadows are critical for foraging. The flammulated owl nests in unused woodpecker cavities carved into medium to large-diameter ponderosa pine or, to a lesser extent, larch trees. This owl's complex habitat needs are a

reminder that restoration efforts should maintain community diversity by incorporating openings, thickets, and snags into restoration plans. In addition to helping species with complex biological needs, providing diverse habitat features supports habitat for a greater variety of wildlife.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
Western bluebird (<i>Sialia mexicana</i>)	WV	Grasslands and oak savannas for foraging, cavities, especially in savanna oaks for nesting, scattered trees or shrubs as hunting perches	Habitat loss, habitat degradation due to invasive non-native plants and lack of fire, competition for cavities from non-native birds, predation by house cats	Location and factors key to success for natural cavity-nesting pairs	Maintain or restore grassland and oak savanna habitat, maintain oaks >22 inches dbh, create snags from competing conifers, maintain nest box programs for cavity habitat in the short-term, design and place nest boxes to minimize use by starlings
Western burrowing owl (<i>Athene cunicularia hypugaea</i>)	CP	Burrows (created by other species, particularly badgers) for nesting; high proportion of bare ground near burrow	Reduction in adequate size and number of burrows due to habitat loss and reduction in burrowing mammal populations; illegal shooting of owls; disturbance during nesting season; collisions with vehicles; collapse of burrows by livestock trampling; control of badger populations in agricultural lands.	Value of artificial nesting structures for population expansion and/or re-introduction	Maintain open ground cover >40-70%, shrub cover <15%, and native grass cover <40% and <6 in tall in nesting areas; provide 200 m buffer zones around nest burrows where pesticide applications, rodent control and human disturbance is minimized; protect badger populations in areas where burrowing owls are present
Western meadowlark (<i>Sturnella neglecta</i>)	WV	Large expanses of grasslands for foraging and nesting due to relatively large home range requirements; scattered shrubs, trees or posts for singing perches	Declining populations; loss and degradation of grassland habitats; nesting failure due to timing of land management practices (e.g., mowing, haying, spraying).	Impact of grazing and agricultural management on productivity	Maintain or restore grassland habitat - especially large expanses of habitat (e.g., >100 acres), increase plant diversity for greater insect diversity, control key non-native plants, minimize disturbance during breeding season (4/15 - 7/1) at known nesting areas
Western purple martin (<i>Progne subis</i>)	KM WV	Abundant cavities for colonial nesting. Proximity to water or large, open areas for foraging	Loss of nesting cavities. Competition with starling for nest cavities. Adequate aerial insect prey base	Complete inventory of distribution. Ability to attract migrating birds with nesting structures	Create and maintain appropriate snags. Maintain nest box programs for cavity habitat in the short-term. Design and place nest boxes to minimize use by starlings
Western snowy plover (<i>Charadrius alexandrinus nivosus</i>)	CR NBR	Coast Range - Sandy and sparsely vegetated shoreline above high tide for nesting habitat Northern Basin and Range - Alkaline flats and salt pans associated with springs, seeps, or lake edges	Coast Range - Small and declining population. Loss and degradation of habitat from natural and human-associated factors (including European beachgrass). Human disturbance of nesting birds. Increased predator populations Northern Basin and Range - Small, disjunct populations; declining population trends; nesting sensitivity to fluctuating water levels	Coast Range - Temporal and spatial effects of predator control activities on reproductive success Northern Basin and Range - Identification of landscape-level breeding and post-breeding habitat needs for responding to annual site-specific changes in water levels	Coast Range - Draft federal recovery plan and Oregon Parks and Recreation Department's Habitat Conservation Plan for the Western Snowy Plover provide information on conservation actions. Note: federal status for this species is currently under review. Northern Basin and Range - Maintain suitable nesting and foraging areas across the landscape to provide habitat regardless of annual variation in precipitation and water levels.

Species	Ecoregion(s)	Special needs	Limiting factors	Data gaps	Conservation actions
White-headed woodpecker (<i>Picoides albolarvatus</i>)	BM EC KM	Large tracts of open ponderosa pine woodlands with mature trees for foraging and snags for nesting	Population declines and local extirpations. Loss of mature ponderosa pine trees and snags. Habitat degradation from encroaching trees and shrubs, and lack of recruitment of young ponderosa pine into larger size classes. Egg predation in areas of high predator (most likely chipmunks and golden-mantled ground squirrels) densities associated with shrubs and down wood	Distribution; impacts of forest management practices and habitat suitability of managed forests; predation rates by individual predator species; habitat relationships of rodent egg predators	Retain existing or manage to meet conditions of large tracts (>700 acres outside old-growth) of open (canopy closure 10-40%) mature (>10 trees/ac > 21 in dbh ¹ and 1.4 snags/acre >8in dbh) woodland; Retain snags and high cut stumps in management; eliminate or restrict fuelwood cutting of stumps and snags in suitable habitat
Willow flycatcher (<i>Empidonax traillii adastus</i>)	NBR	Riparian shrub dependent; dense continuous or near-continuous shrub layer, especially of willows	Population declines; loss and degradation of riparian shrub habitat from altered hydrological regimes and invasive species; cowbird parasitism	Site and landscape factors that contribute to cowbird parasitism	Partnerships with private landowners to maintain and restore habitat and control priority invasives: dense riparian shrub patches (especially willow) > 10 square yards in size with 40-80% shrub cover > 3 ft high; discourage cowbird use of riparian areas through seasonal timing of grazing and/or maintaining high grass heights in priority areas
Yellow rail (<i>Coturnicops noveboracensis</i>)	EC	Narrow range of water depths and presence of senescent vegetation within sedge meadows	Small, disjunct population. Specific wetland types and conditions. Intensive livestock grazing that removes >50% of senescent vegetation. Hydrological changes from wetland draining or inundation	Complete inventory of other potential breeding habitats in southcentral Oregon. Prey selection and its potential relationship with preferred water levels	Maintain preferred water levels of approximately 2.4-2.8 inches during the breeding season. Maintain at least 50% of senescent vegetation from year to year
Yellow-breasted chat (<i>Icteria virens</i>)	WV	Dense brushy thickets, especially near streams	Loss of larger patches of dense riparian shrub habitat	Nesting ecology and habitat relationships in riparian habitat; patch size requirements	Restore relatively large areas of dense thickets of native shrub-dominated riparian habitats

¹ Recommended tree size is the average within the range typically used by the species.

Raptors and Grassland Songbirds

Northeastern Oregon is home to the state's largest and most intact native grasslands. This expansive open country is important to a variety of grassland-dependent birds, including raptors and songbirds. High ground squirrel populations are prey for an impressive array of raptors, including golden eagles; prairie falcons; and ferruginous, Swainson's, red-tailed, and roughlegged hawks. In fact,

Zumwalt Prairie may host one of the highest raptor populations in the nation. Grasslands also feature a variety of wildflowers, which host diverse insects. The insects are food for grassland songbirds, such as savanna sparrows, western meadowlarks, horned larks, and vesper sparrows. Oregon State University researchers led by Dr. Pat Kennedy are studying bird populations in the Blue Mountains'

grasslands. Current research includes landscape factors that affect raptor nest site availability and the effects of invasive plants on grassland songbirds. Such information can assist landowners and managers in providing habitat for Oregon's grassland-dependent species.