Woodland Fish & Wildlife

Managing Small Woodlands for Raptors: Oregon &Washington

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Introduction

The soaring wings, sharp talons and intense eyes of raptors, have long inspired people. Raptors, or birds of prey, include hawks, eagles, osprey, falcons, owls and vultures. Woodland forest owners know these birds as interesting and important denizens of their land. Raptors are powerful hunters and principal predators in forests. They fill unique ecological roles, particularly by preying upon a variety of species including small mammals, insects, fish, birds, snakes and lizards. Raptors are valuable to small woodlands for rodent control and are indicators of healthy ecosystems. The number one way that woodland forest owners can provide habitat for raptors is by keeping their land in forestry.

This publication provides information on the range, habitat, status and life-cycle of forest-dwelling raptors in Oregon and Washington. Additionally this publication briefly discusses pertinent regulations for these raptors. Note that all species in this publication are protected by the Migratory Bird Species Act (MBTA). This publication also outlines specific management objectives and practices for small woodland owners interested in enhancing, creating or maintaining habitat for raptors on their woodlands.

Forest-Dwelling Raptors in Oregon and Washington

Oregon and Washington are home to a variety of raptor species, across all habitat types and geographic ranges. This publication focuses on raptor species that inhabit forested areas. These species can be categorized by forest habitat type association. Table 1 lists raptors commonly associated with forested areas of Oregon and Washington. Following the table, each of these species will be discussed in further detail.

Bald Eagle. Photo by Gregg Thompson.

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Table 1. *Nesting or Year-Round Forest-Dwelling Raptors Associated with Forests in Oregon and Washington*

Species	Range	Habitat
Forest Generalists		
Cooper's hawk	Throughout OR/WA	Coniferous, mixed and deciduous forests, including riparian forest and juniper or oak woodlands.
Sharp-shinned hawk	Throughout OR/WA	Diverse mixed and conifer forests.
Red-tailed hawk	Throughout OR/WA	Mixed forest, Open canopy forests or near open fields. Needs a larger tree to support their nest
Great-horned owl	Throughout OR/WA	All forest types, but prefers edges between forests and open areas.
Barred owl	Western OR/WA and Northeast OR/ WA and a portion of southeastern WA	Conifer and mixed forests. Tolerant of urban/ rural environs, fragmented forest, younger-mid seral age classes.
Northern pygmy owl	Throughout OR/WA, except southeast OR and portions of eastern WA	Diverse mixed and conifer forest, mid to older age classes forests.
Northern saw-whet owl	Throughout OR/WA	Coniferous and occasionally riparian forests.
Dry Forests		
Flammulated owl	Eastern OR/WA	Dry forests with open understories.
Golden Eagle	Eastern OR/WA	Open juniper or ponderosa pine woodlands and mixed forests.
Mature Conifer Forests		
Bald Eagle	Throughout OR/WA	Nests in forest stands with large, dominant trees.
Northern goshawk	Mountainous regions of OR/WA	Large patches of intact mature coniferous or mixed forests with high canopy closure and open understories.
Great gray owl	Southern OR Cascades, Northeast OR/ SE WA and a portion of NE WA	Large patches of intact mature or old-growth conifer forests adjacent to forest openings.
Northern spotted owl	Western OR/WA	Mature and old-growth conifer forests with dense canopy cover, open understories and abundant downed wood.
Forest Edges/Riparian		
Red-shouldered hawk	Southwest Oregon, Willamette Valley, and Columbia Valley	Moist mixed or deciduous woodlands, especially riparian bottomlands.
Western screech owl	Throughout OR/WA	Forest edges and riparian woodlands adjacent to open pastures or fields.
Raptors with Special Habitat Requirements		
Osprey	Throughout OR/WA excepting arid regions of SE Oregon	Nests within 2 miles of water, where snags or trees with broken tops (suitable for nesting) are found.
Peregrine falcon	Throughout OR/WA	Moist mixed forests. Nests on cliffs 75-1,500 feet in height.

Forest Generalists

Cooper's hawk
(Accipiter cooperii)

Cooper's hawks, while considered uncommon, can be found in most forest types. They are highly migratory in much of the Northwest, nesting in mixed forests and then migrating to winter in the southern United States and Central America. Habitats include coniferous, mixed and deciduous forests and woodlands, including riparian areas (Henny 2006, Wahl et al. 2006). Cooper's hawks are comparable in size to American crows, and are very similar to sharp-shinned hawks (which are smaller) in appearance (Cornell University 2015). Cooper's hawks are highly skillful fliers, feeding on a variety of small birds and mammals. Prey items include American robins, Steller's jays, European starlings, rock doves, dark-eyed juncos and spotted towhees, rabbits, tree squirrels, woodrats, chipmunks, and ground squirrels (Cornell University 2015; Marshall et al. 2006).

Sharp-shinned hawk
(Accipiter striatus)

Sharp-shinned hawks are the smallest of the Accipiters, and can be found in a variety of forest types. Nesting habitats are generally characterized by dense canopy cover and high tree density. Sharp-shinned hawks, similar to Copper's hawk in their hunting style, feed primarily on small birds, such as sparrows, finches, chickadees and warblers. Diet is supplemented with small mammals (mice and voles). Sharp-shinned hawks are slightly smaller than Cooper's hawks, to which they are otherwise nearly indistinguishable. Sharp-shinned hawks are found in forests at all elevations (Marshall et al. 2006, Wahl et al. 2006). They often prey upon songbirds at backyard bird feeders.

Juvenile red tailed hawk. Photo by Moore Northwest Images.

Coopers Hawk (A), photo by Mark Penninger. Sharp-shinned hawk (B), photo by Moore Northwest Images. Great Horned Owl (C), photo by Mark Penninger.

red-tailed hawk
(Buteo jamaicensis)

Red-tailed hawks are the most common medium-sized raptor, often seen perching on poles along roadways, on fence posts near fields, and in trees at forest edges. Adults have a characteristic red tail. They are common year-round residents and are frequently found in open woodlands, agricultural lands, grasslands, and sagebrush, but can also be seen in forested areas near clearcuts (Marshall et al. 2006, Wahl et al. 2006). Red-tailed hawks construct large stick nests in large trees, though will also use utility poles and cliff faces. Egg laying begins in late March, and juveniles fledge in mid-June. The diet of the red-tailed hawk is varied, but is comprised primarily of small and medium sized mammals (mice, voles, ground squirrels, rabbits) and snakes (Marshall et al. 2006).

Great horned owl
(Bubo virginianus)

Great horned owls are found in nearly every forest type and also inhabit urban areas, agricultural areas and high deserts. They tend to be most abundant near edges between forests and open areas. They are common, permanent residents (Marshall et al. 2006). Great horned owls are large (the heaviest owl) and have distinctive feather tufts above large yellow eyes.

Northern pygmy owl. Photo by Roy Siegel.

They feed upon a large variety of prey, including small and medium-sized mammals, other owls, waterfowl, small birds, snakes, and insects. Prey items may include rabbits, mice, voles, woodrats, and mountain beavers. Great horned owls typically nest in unused red-tailed hawk nests in the crooks of medium to large sized trees, in the tops of broken off trees, artificial platforms, but will also nest on rocky ledges or even on the ground. Nesting begins in late winter, January or February, and juveniles disperse in September (Marshall et al. 2006). They are fierce predators, and have been known to take skunks and house cats.

Barred owl
(Strix varia)

Barred owls inhabit moist conifer and mixed forests. Their range has expanded in recent years due to changes in habitat conditions to include nearly all forest types across the northwest. They are increasingly common year-round residents (Marshall et al. 2006, Wahl et al. 2006). The "barred" in their name is from bold white and brown vertical streaking on its breast. Nesting begins with courtship in late February to March, and juveniles disperse by July to August. Their call is an eerie, rising "Who Cooks for You", often coming from riparian areas. The barred owl primarily nests in cavities, but may use old stick nests built by hawks, crows or squirrels. Barred owls prey upon a wide variety of species, including mammals (flying squirrels, rabbits, moles), birds, amphibians, lizards, snakes, crayfish, and insects (Hamer et. al. 2001). Barred owls are native to eastern North America, and were first documented in Oregon in 1965. Barred owls are highly aggressive toward other owls, and compete for habitat and other resources such as prey and nesting space with the closely related and more mild-mannered and habitat specialized northern spotted owl.

Northern pygmy owl
(Glaucidium gnoma)

Northern pygmy owls are tiny owls that can be found throughout most forested areas of Oregon and Washington (Marshall et al. 2006, Wahl et al. 2006). They more commonly occur in tracts of contiguous forest but will also use forests fragmented by timber harvest. Northern pygmy owls are aggressive predators, preying upon small mammals, birds, reptiles, and insects. They have distinctive black spots on the back of their head that imitate eyes. Pygmy owls nest in cavities created by woodpeckers. Nesting begins in April and May, and juveniles are thought to disperse by September (Marshall et al. 2006).

Northern saw-whet owl
(Aegolius acadicus)

Northern saw-whet owls are considered one of the most common owl species and can be found in coniferous, mixed, and occasionally riparian forests at low-elevations (Marshall et al. 2006, Wahl et al. 2006). They nest in cavities, natural or created by woodpeckers, and will also use nest boxes. Nesting generally begins in April, and dispersal is thought to occur in September. Northern saw-whet owls are small and have distinctive white "v" shaped markings

Northern saw-whet owl. Photo by Paul Brooke.

above their eyes. They prey upon mice, voles, other small mammals, birds and insects (Marshall et al. 2006).

Dry Forests

Flammulated owl
(Otus flammeolus)

Flammulated owls are tiny owls with brown coloring and small ear tufts that can be found in dry forests with sparse understories. They strongly prefer ponderosa pine habitats where large diameter snags are available. They will also use mixed conifer forests, especially those with snags, cavities and open stand structure. Flammulated owls breed in Washington and Oregon, and arrive from wintering locations in May. They nest in cavities, and breeding begins in June, with fall migration occurring primarily in September or October. Flammulated owls feed mostly on insects, including crickets, moths and beetles (Marshall et al. 2006, Wahl et al. 2006). Flammulated owls are a candidate for listing under Washington's Endangered Species Act, and are a priority species in Washington (WDFW 2008). The species

is on Oregon's Sensitive Species List and a priority species in the Oregon Conservation Strategy (ODFW 2006, 2016 revision pending approval).

Golden eagle
(Aquila chrysaetos)

Golden eagles are large raptors (even larger than the bald eagle) that can be found in a variety of habitats. Forested habitats that may be home to golden eagles include open ponderosa pine, juniper woodlands, mixed conifer/deciduous forests and woodlands. They are primarily found in eastern Oregon and Washington, where they are year-round residents (Marshall et al. 2006, Wahl et al. 2006), but they are known to nest west of the Cascades as well. Golden eagles build gigantic nests in mature trees and on cliffs; as with many other raptor species, nest sites are used year after year. Egg laying begins as early as late February, and juveniles fledge between late June and early August. Juveniles disperse about 11 weeks after fledgling. Golden eagles primarily prey upon small and medium-sized mammals, including jackrabbits and marmots, and occasionally newborn deer and pronghorn antelope (Marshall et al. 2006). Golden eagles are offered extra protection by the Bald and Golden Eagle Protection Act. In Washington, they are also a candidate for listing under the state's Endangered Species Act (WDFW 2008). According to Washington and Oregon forest practices rules, golden eagle active nest sites may require protection, and seasonal timing restrictions on forest operations may be necessary during the nesting season (January 31 – August 1) to protect active nests from unintended disturbance.

Golden Eagle. Photo by Mark Penninger.

Mature Forests

Bald eagle
(Haliaeetus leucocephalus)

Bald eagles are large eagles with distinctive white heads that will inhabit any forested area with large trees adjacent to large bodies of water. Juveniles are dark with mottled white under their wings, acquiring the white head at approximately 5 years of age. Nests sites are generally with 2 miles of large lakes, reservoirs, rivers or the ocean. Both resident and migrant populations of bald eagles are found in Oregon and Washington. Bald eagles are widespread, and can be found wherever there is a suitable prey base (Marshall et al. 2006). They are often found along waterbodies at lower elevations (Wahl et al. 2006) and near wintering big game (and cattle operations) in eastern Oregon and Washington. Nesting begins in mid-February, and young fledge from the nest from June to mid-August. They will use the same nest site year after year, adding sticks to their massive platforms. Bald eagles feed primarily on fish and carrion, but also on birds (especially waterfowl), mammals, and invertebrates (Marshall et al. 2006). Bald eagles are a federal Species of Concern and are offered extra protection by the Bald and Golden Eagle Protection Act. They are a state sensitive and priority species in Washington, a State Sensitive Species in Oregon, and also protected under Oregon's Forest Practices Act. Site-specific protections include protection of nest sites and forest operation restrictions near the nest site during the breeding season (January to August) and near

Bald Eagle. Photo by Mark Penninger.

winter communal roosting sites during the winter (October through March). Bald eagles were removed from the federal endangered species list in August of 2007 because their population has recovered sufficiently.

Northern goshawk
(Accipiter gentilis)

Northern goshawks are fearless forest predators and a favorite of falconers. They are the largest of the 3 species in the genus Accipiter. Juveniles look similar to both sharp-shinned and Cooper's hawks, except for their size. Northern goshawks inhabit large contiguous tracts of mature conifer and mixed conifer forests. They are uncommon, permanent residents to all of Washington and Oregon where suitable habitats are found (Marshall et al. 2006, Wahl et al. 2006). Northern goshawks build stick nests on large limbs in the middle canopy. Nesting begins in March, and fledglings are dependent upon adults until September. Northern goshawks feed upon a variety of birds and mammals, including hares, squirrels, grouse, jays, robins and woodpeckers (Marshall et al. 2006). Northern goshawks are a federal Species of Concern. They are candidates for listing under Washington's Endangered Species Act, and a Priority Species in Washington (WDFW 2008). Site specific forest operation restrictions may apply to nest sites in Oregon and Washington. The species is on Oregon's Sensitive Species List and a priority species in the Oregon Conservation Strategy (ODFW 2006, 2016 revision pending approval).

Great gray owl
(Strix nebulosa)

Great gray owls are enormous grayish owls and their large head has a distinctive facial disc. They are associated with mature and old-growth coniferous forests, almost always near openings (such as meadows or clearcuts) (Marshall et al. 2006). In Washington, great gray owls are rare in the north central and southeast portions of the state (Wahl et al. 2006). In Oregon, they are also uncommon, occurring in the south-central and northeastern portions of the state. Great grey owls nest in broken top trees, mistletoe clumps, and platform stick nests made by squirrels and hawks. They are also known to use artificial nest platforms. Breeding begins in late February, with eggs laid at the beginning of March. Juveniles fledge from the nest from mid-May to mid-June and may disperse up to three months following fledgling. Diet of the great gray owl includes pocket gophers, voles and other small mammals (Marshall et al. 2006). The species is on Oregon's Sensitive Species List and a priority species in the Oregon Conservation Strategy (ODFW 2006, 2016 revision pending approval).

Great gray owl. Photo by Mark Penninger.

Northern spotted owl
(Strix occidentalis)

Northern spotted owls inhabit mature and old-growth coniferous forests with dense, multi-layered canopies and large amounts of dead wood, standing and downed. Northern spotted owls are year-round residents and inhabit moist coniferous forests in the Cascades and on the coast of both states (Marshall et al. 2006,

Goshawk. Photo by Matt Gostin.

Juvenile great gray owl. Photo by Mark Penninger.

Northern spotted owl. Photo by Fran Cafferata Coe.

Wahl et al. 2006). They nest in cavities or platforms, and nesting begins in late March or April, with juveniles dispersing in September to October. Northern spotted owls are mature forest specialists, feeding primarily on flying squirrels and woodrats (Marshall et al. 2006). The spotted owls have suffered a significant decline in recent decades, likely driven by competition from the closely related barred owl and loss of old forest habitats. (USFWS 2016). Northern spotted owls are protected by the federal Endangered Species Act, by the Oregon Forest Practices Act, and by Washington State Forest Practices Rules. The species is on Oregon's Sensitive Species List and a priority species in the Oregon Conservation Strategy (ODFW 2006, 2016 revision pending approval).

Forest Edges/Riparian

Red-shouldered hawk
(Buteo lineatus)

Red-shouldered hawks are medium-sized hawks with distinctive black and white flight feathers and red patches on their shoulders. They have recently expanded their range into Oregon, and are expanding into Washington as well, where they are rare winter visitors (Marshall et al. 2006, Wahl et al. 2006). Red-shouldered hawks inhabit moist woodlands, especially riparian bottomlands with deciduous trees. They build stick nests in the upper canopy and begin nesting in March, with fledglings in late June and early August. The timing of nesting and migration is not fully understood due to the recent expansion of this hawk's range. Red-shouldered hawks eat small mammals, birds, snakes and lizards, amphibians and crayfish (Marshall et al. 2006).

Western screech owl
(Megascops kennicottii)

Western screech owls inhabit forest edges and riparian woodlands. Preferred habitats are located near pastures or fields and contain large trees. Western screech owls are fairly common year-round residents throughout suitable habitats (Marshall et al. 2006, Wahl et al. 2006). These small owls sport distinctive tufts similar to the much larger great horned owl. Western screech owls nest in cavities, will use artificial nest boxes, and are known to use human structures with a suitable cavity. Breeding begins in January or February and juveniles typically fledge in June to July, but sometimes extend into August. The diet of the western screech owl is diverse, with prey items including voles, mice, frogs, crayfish, small fish, small songbirds and insects (Marshall et al. 2006).

Western screech owl. Photo by Khahn Tran.

Raptor Species with Special Habitat Requirements

Osprey. Photo by ODFW.

Osprey
(Pandion haliaetus)

Osprey, sometimes called the "fish hawk", are typically seen along waterways. They are white in appearance and have a distinctive "crook" in their long wings when in flight. They have become increasingly more common, benefiting from the protections offered to bald eagles. Osprey inhabit areas with suitable nesting sites within 2 miles of water (Wahl et al. 2006, Marshall et al. 2006). These include snags, large trees with broken tops, utility poles, communication towers, or artificial platforms. Osprey return from wintering locations from from March to April. Osprey build large stick nests, and begin nesting in late April. Juveniles generally fledge in late July to early August. Osprey feed almost entirely upon fish (Marshall et al. 2006) which they grasp with their unique spiked feet. Osprey are offered extra protection in Oregon by the State Forest Practices Act. Protections may include preservation of nest sites and forest operation restrictions near the nest site during the breeding season (March 1 – September 15).

Peregrine falcon. Photo by Gregg Thompson.

Peregrine falcon
(Falco peregrinus)

Peregrine falcons are wide ranging, mid-sized raptors. (Marshall et al. 2006, Wahl et al. 2006). Their name means "wanderer" and they are renowned as the fastest bird in the world, diving at over 200 mph. Peregrines nest primarily on cliffs, but also use bridges and tall buildings in cities. Peregrine falcons do not build nests but instead create small "scrapes" in the nesting substrate, and have been documented to re-use nests created by ravens, golden eagles or red-tailed hawks. The timing of nesting is highly dependent on the elevation of the habitat used. Peregrine falcons at lower elevations begin nesting in March, whereas at high elevation sites, nesting may not begin until May. Fledgling occurs from May to mid-August. Peregrine falcons are adaptable predators. Their diet varies upon the habitat they reside in, and may include birds ranging in size from hummingbirds to geese; mammals, including mountain beaver, squirrels and bats, insects, and fish (Marshall et al. 2006). Peregrine falcons are a federal Species of Concern, and are a sensitive and a priority species in the state of Washington WDFW 2008). The species is on Oregon's Sensitive Species List and a priority species in the Oregon Conservation Strategy (ODFW 2006, 2016 revision pending approval). Peregrine falcons were removed from the federal endangered species list in August of 1999 because their population has recovered sufficiently.

How do I know if my forest is providing habitat for raptors?

Given the wide range of habitat types that various species of raptors use, there is a good chance that your forest already provides habitat for one or more species of raptor. It is important to evaluate your forest to determine what habitat for raptors already exists, and, to determine what actions are needed to create or improve raptor habitat. Remember, that different raptor species benefit from different actions and not everything you do will benefit all raptor species. The following are some of the questions you may consider when evaluating your forest.

- What is my stand configuration? Do I have any mature timber stands? These are good for many species, including the northern goshawk.
- Do I have any young plantations? These are good for many species, including the sharp-shinned hawk.
- Do I have riparian areas and if so, am I protecting them by leaving large trees near the streams? This is good for all raptor species.
- Do I have any tall snags or do I have plans to leave or create tall snags? This is good for cavity nesters such as the small owl species and for perches for all raptor species.
- Do I have any tall live trees or do I have plans to leave any? This is good for nesting and perching for many species. Very large decadent trees are especially important as possible nesting trees for large raptors.
- If I have a nesting raptor on my property, can I modify timing of planned activities to avoid disturbance to nesting raptors? This is good for all species.
- Do I have any artificial perches or nest platforms? This can be a good alternative to natural sites if they aren't available for many species, including osprey.
- Am I minimizing the use of insecticides and rodenticides? The use of these chemicals (especially rodenticides) is potentially harmful to all species of raptor as they may eat poisoned small mammals, resulting in death.

Management Considerations for Raptors

Habitat requirements for raptors are generally compatible with managing small woodlands. Managed forests can provide a variety of habitats required by raptors for nesting, roosting, and feeding. Mature trees provide nesting and perching opportunities while open and younger timber provide valuable hunting habitat. Raptors are beneficial components of small woodlands, particularly by feeding primarily on small mammals that can pose a challenge for forest managers. Raptors can help control rodent populations (e.g., rabbits, gophers and voles) on managed forests. Consider them "flying mousetraps".

Nesting habitat and suitable nest sites are critical elements required by raptors. Most raptors require tall and sometimes defective trees for nesting. Most species of tree can provide nesting sites for raptors, including conifers and hardwoods such as maple, oak, Douglas-fir, spruce, hemlock and cottonwood. The best raptor nest trees contain opportunities for platform construction (such as forked tops or mistletoe platforms) or the presence of cavities in rotted out centers. Leaving standing trees in clear-cuts provides needed perching sites for many species of raptor. One of the best ways for woodland forest owners to provide habitat for raptors is to provide for their prey base by leaving standing dead and dying trees as well as abundant down wood.

Raptors are vulnerable to disturbance, especially during the nesting season. Egg laying is a critical time for nesting raptors. Avoiding forest management activities adjacent to nesting sites during this time will help with nesting success and retaining raptors on the landscape. Note that several species are protected by Forest Practices Acts rules, and management is restricted around known sites during the nesting season for these species. Walking your forest stands to locate active raptor

nests is a good thing to do in late winter and early spring.

More specific management considerations for raptors that reside in each habitat type identified in Table 1 (above) are included in the following sections.

Forest Generalists

As forest generalists, the Cooper's hawk, great-horned owl, northern pygmy owl, northern saw-whet owl and sharp-shinned hawk can benefit from a broad range of forest management actions. Increasing habitat diversity through the protection or retention of special features, including rock outcrops, snags, large mature trees, meadows and hardwoods can benefit these species by enriching their habitat (USFWS 2008).

- Cooper's hawks utilize deformed trees, or trees with diverse structure (especially older maple and cottonwood) for nesting; retaining these trees (which may not be valuable at market), may encourage use by Cooper's hawks (Marshall et al. 2006, Wahl et al. 2006).
- Sharp shinned-hawks nest in dense stands of trees, so maintaining some stands with high tree density and high canopy closure will support the nesting needs of this species (Cornell University 2015).
- Great horned owls, who favor more open areas, may benefit from the creation or maintenance of small meadows, and the thinning of dense stands to more open stands (Marshall et al. 2006).
- Northern saw-whet owls will utilize artificial nest boxes, so the placement of these structures throughout mature forest stands may benefit this species, especially if natural cavities are lacking (Cornell University 2015, USFWS 2008).
- Cavity nesting species, such as the northern pygmy owl, will benefit greatly from the retention of snags where cavities can be created by woodpeckers, the retention of trees that already contain cavities (USFWS 2008, Cornell University 2015) or the creation of snags by topping selected trees.

Dry Forests

The golden eagle and flammulated owl live in dry forests east of the Cascades (Marshall et al. 2006, Birds of WA). Golden eagles prefer to forage in open areas with a grassland or sagebrush component; maintaining large meadows or sagebrush steppes will provide foraging opportunities for this species (Larsen et al. 2004, Cornell University 2015). In addition, protecting any cliffs or steep escarpments with operational buffers may encourage nesting for golden eagle (Larsen et al. 2004, Cornell University 2015, USFWS 2008). Known nest sites should be monitored and protected with adequate buffers when nesting occurs.

Flammulated owls are cavity nesters, and will benefit from the retention or creation of snags (Cornell University 2015, USFWS 2008). They usually nest in older ponderosa pine stands, so retention of these stands will support this species. The creation and maintenance of uneven stands of open, mature trees, especially those with brushy clearings will support the insectivorous flammulated owl (WDFW 2004). Retaining areas with brushy understories and avoiding the use of insecticides that target forest insects helps support the Flammulated owl by supporting its prey base (Larsen et al. 2004; Marshall et al. 2006).

Open Forests

Raptors that utilize open forests and woodlands, such as the Red-tailed hawk can benefit from thinning practices that decrease tree density. Providing suitable perches can benefit open-forest dwelling raptors, as they are often perch hunters (USFWS 2008). Snags, large trees, perch poles, and brush, slash and rock piles can all provide key habitat (Marshall et al. 2006, USFWS 2008).

Mature Forests

The preservation of mature forests with dense canopy covers will benefit the barred owl, northern spotted owl, great gray owl and northern goshawk. Retention of downed wood and snags will support the species by providing nesting substrates, perches and prey habitat. Some species, including great gray owls, forage in forest openings, such as meadows. Creating small meadows within or adjacent to mature stands can increase habitat suitability (Marshall et al. 2006). Maintaining connectivity to other mature forest stands adjacent to your property (such as those located on public lands), can greatly support the mature-forest dwelling raptors. Minimizing disturbance to known nesting sites of mature-forest dwelling raptors during the breeding season can increase the chance of nest success (Larsen et al. 2004, USFWS 2008).

Flammulated Owl.
Photo by Danielle Munzing.

Forest Edges/Riparian

The protection of riparian areas through stream buffers can increase the amount of habitat available to raptor species that utilize these areas, such as the western screech owl and the red-shouldered hawk, found in southern Oregon. Red-shouldered hawks have also been negatively impacted by habitat fragmentation; maintaining habitat connectivity with adjacent land ownerships, could positively impact the species (Marshall et al. 2006).

Open forest. Photo by Kendel Emmerson.

As cavity nesters, western screech owls depend upon snags for nesting substrates. Maintaining or creating snags will benefit the western screech owl and other cavity nesting species (Cornell University 2015, USFWS 2008).

Special Habitats

Bald eagles generally choose to nest in the largest trees of mature forest stands, from which they can command a view of their surroundings; maintaining these trees for their nesting use may encourage nesting on your property. Leaving old "wolf" trees standing is a great way of providing habitat for bald eagles and many other species as well.

Osprey nest in similar settings to bald eagles, almost exclusively at the top of snags or snag-like features. Maintaining snags, erecting platforms, or coordinating with your local utility to provide artificial platforms to utility poles can increase nesting habitat for osprey, so long as there is a waterbody nearby (Larsen et al. 2004, USFWS 2008). Providing perches in key locations by maintaining snags, thinning tree crowns or girdling tops of prominent trees with the help of tree climber can also create wildlife viewing opportunity for you, the landowner.

Peregrine falcons primarily nest on cliffs. If your property contains cliffs, then avoiding disturbance during the nesting season is the best way to support nesting peregrine falcons.

Summary of Management Actions for Raptors

There are many actions that may benefit raptor species on small forests and woodlands. The following actions are recommended:

- Retain/create snags throughout the stand, targeting larger trees;
- Retain/add downed wood throughout the stand;
- Leave some slash piles unburned, providing habitat for raptor prey species;
- Retain / promote patches of mature forests and large trees for potential raptor nest sites;
- Protect and improve quality/quantity of riparian buffers;
- Create small meadows and retain natural forest openings where they exist;
- Maintain / improve connectivity to adjacent stands;
- Protect known raptor nests sites;
- Retain hardwoods (important for songbirds, an important prey source for many raptors);
- Conduct thinnings to promote stand development and improve habitat condition;
- Plant native seed and fruit bearing shrubs to increase stand diversity, improving habitat for raptor prey species;
- Minimize human disturbances to known nest sites during the breeding season;
- Avoid activities within line-of-site to nest sites to avoid disturbance;
- Provide rock & brush or slash piles (perches and prey habitat);
- Avoid / Minimize use of insecticides and rodenticides;
- Limit human disturbance to known nest sites during the breeding season and
- Protect unique features, such as cliff faces or rock escarpments.

Juvenile screech owls. Photo by Khahn Tran.

More information on raptor species and managing forests for wildlife can be found at the following sources:

Partnership for Forestry Education website for landowners:
Knowyourforest.org

OFRI Illustrated Guide to Forest Protection Laws:
http://oregonforests.org/sites/default/files/publications/pdf/OR_For_Protect_Laws_2011.pdf

Habitat for Wild Animals:
http://knowyourforest.org/learning-library/creating-a-home-for-wild-animals

Woodland Fish and Wildlife Publications:
http://westernforestry.org/WoodlandFishAndWildlife/category/publications/

Oregon Department of Fish and Wildlife:
http://www.dfw.state.or.us/

Oregon Department of Forestry:
http://www.oregon.gov/ODF/Pages/index.aspx

Washington Department of Fish and Wildlife:
http://wdfw.wa.gov/

Management Recommendations for Washington's Priority Species:
Birds: http://wdfw.wa.gov/publications/00026/wdfw00026.pdf

Washington Department of Natural Resources:
http://www.dnr.wa.gov/

Cornell Lab of Ornithology:
http://www.birds.cornell.edu

U.S. Fish and Wildlife Service Guidelines for Raptor Conservation in the Western United States:
http://www.blm.gov/pgdata/etc/medialib/blm/ut/lands_and_minerals/oil_and_gas/february_20120.Par.52166.File.dat/FWSRaptorGuidelines.pdf

Barred Owl. Photo by Nicole Ahr.

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About the Woodland Fish and Wildlife Group

The Woodland Fish and Wildlife Group is a consortium of public agencies, universities, and private organizations which collaborates to produce educational publications about fish and wildlife species, and habitat management, for use by small woodland owners in the Pacific Northwest.

Currently available publications can be viewed and downloaded, free of charge, at the organization's website:

www.woodlandfishandwildlife.com

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