WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WILDLIFE ON BRIDGES

This brochure provides information on wildlife species commonly associated with bridge structures, sign structures, and luminaries throughout Washington State. Most species which occur on bridges or structures are protected by state or federal laws, making it essential to know what signs to look for on the structures to avoid unlawfully impacting these species. It is also important to be aware of the laws that protect these species, which is why brief summaries of applicable regulations are provided.

GENERAL INFORMATION

The following information is provided to help bridge inspectors to know:

- Which laws protect wildlife species that may use bridges
- How to identify various species commonly associated with bridges
- General habitat requirements for these species
- What signs to look for to determine if bridge structures are occupied
- Guidelines to conduct bridge inspection activities without violating the Migratory Bird Treaty Act (MBTA), State wildlife laws (Chapter 77.15 RCW), or the Endangered Species Act (ESA) (see below for description)

FEDERAL AND STATE REGULATIONS

The regulations protecting wildlife species found on bridges are described briefly below.

- **Migratory Bird Treaty Act**
- **Washington State Regulations: Fish and Wildlife Enforcement Code, Chapter 77.15 RCW**
- **Endangered Species Act**

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 USC 703), originally passed in 1918, makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, or barter any migratory bird, or the parts, nests, or eggs of such a bird **except** under the terms of a valid Federal permit. The term "take" is not defined in the MBTA, but the U.S. Fish and Wildlife Service has defined it by regulation to mean to "pursue, hunt, shoot, wound, kill, trap, capture or collect" or to attempt those activities. Under the provisions of the MBTA, the unauthorized take of migratory birds is a criminal offense, even if it is unintentional.

Fish and Wildlife Enforcement Code, Chapter 77.15 RCW.

Rules established in this chapter of the Revised Code of Washington (RCW) prohibit the unlawful taking of Endangered and Protected fish or wildlife. The rules stipulate that a person is guilty of unlawful taking if they hunt, fish, possess, or maliciously kill protected/endangered fish or wildlife, or if the person possesses or maliciously destroys the eggs or nests of endangered/protected fish or wildlife, and the taking has not been authorized by rule of the commission. "Unclassified" fish and wildlife, which refers to non-game wildlife resources, are also protected under these rules. The use of explosives or poisons that impact state wildlife or fish is unlawful unless in compliance with federal and state laws and label instructions or if authorized by the Director of Fish and Wildlife.

Endangered Species Act

The ESA prohibits the take of listed Endangered and Threatened species without special permit ("take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect or the attempt to engage in such activities). The ESA also designates Candidate and Proposed species, which are not formally protected under the ESA, however are species of concern. Washington State also has a state-level ESA, under which state species that are endangered with extinction can be protected. At this time there have been no federal or state-listed species observed on bridges in Washington State.

SUMMARY OF BEST MANAGEMENT PRACTICES FOR BRIDGE INSPECTION DOCUMENT

The *Best Management Practices for Bridge Inspection and compliance with the Migratory Bird Treaty Act* is a document that provides guidelines for protecting wildlife (particularly birds) on bridges during inspections. The guidance provides a list of covered bridge inspection activities, a list of species that are protected under the MBTA and State wildlife laws, and a list of species that are not protected. A discussion of what violates the MBTA and state laws is provided. The document also provides guidelines (both for protected and unprotected species) on how to avoid violations of law. This information is briefly summarized below.

What kinds of activities violate the MBTA and state laws protecting nesting birds?

- Removal of nests containing eggs or young of migratory and protected bird species.
- Activities which cause the death of adult or young birds –i.e., activities which would cause pre-fledge young to leave nest prematurely or adults to abandon eggs or young.
- Removal (without replacement) of nests, which are used by protected birds year after year (mainly a WDFW concern for osprey nests)

Avoiding these results are the performance standards that must be met to be in compliance with the guidance.

Does it mean that activities that require the removal of a nest with eggs or young could never occur?

No - removal of nests with eggs or removal of young may occur provided all appropriate permits are obtained. Blanket coverage permits are not obtained by WSDOT at this time. Permits are obtained on an as-needed basis and it can be difficult and time consuming to obtain them.

What activities can be performed during emergency inspections?

Inspection activities completed for emergency situations do not have to follow the interim best management practices (BMP). The regional biologist should be contacted if protected species were encountered during the emergency inspection. If possible contact them beforehand for assistance.

Recommended Best Management Practices

All best management practices for protected species that are recommended for bridge inspectors are listed below, although they vary depending on species. The following inspection recommendations are listed in order of preference.

1. Inspect bridge outside of nesting season.
2. If inspection during nesting season is required, inspect outside the incubation and fledging period. The regional biologist or bridge maintenance staff may know exactly where the birds are in their nesting cycle. Refer to Table 1 for regional biologists contact information for all species in this document or other wildlife.
3. If inspection during incubation/fledging period is required, inspect the portions of the bridge that are not used for nesting using biologist support to define a site-specific buffer zone. The biologist may observe inspections and determine what distances from activities cause species disturbance.
4. If inspection near an active nest is required, work with the regional biologist (Table 1) to create a site-specific inspection plan. The plan may consider time of year, status of nesting pair, nest location; inspection activities that need to occur near the nest, etc. The plan may allow bridge

inspection to occur without restrictions; may allow inspection of most of the bridge, leaving a site-specific buffer zone around the nest; may allow for a short period of inspection in the nest area or, may suggest rescheduling bridge inspection to a different time. Nesting period may not be as long as specified above and the biologist can inspect the nest to see if it is still active or if fledging has occurred. Nests and nesting debris can be removed after active nesting period has been completed.

Table 1. WSDOT Contacts

Region	Name of Contact	Phone Number
Bridge Preservation Office - ESO *Primary contact*	*Eric Wolin*	*360-705-7487*
ESO Biology Program *Primary Contact* *Back-up Contact*	*Marion Carey* *Kelly McAllister*	*360-705-7404* *360-705-7426*
Northwest Region *Primary Contact*	*Brian Bigler*	*206-440-4519*
North Central Region *Primary Contact* *Back-up Contact*	*Claton Belmont* *MattWisen*	*509-667-3055* *509-667-3021*
Olympic Region *Primary Contact* *Back-up Contact*	*Carl Ward* *Hans Purdom*	*360-570-6706* *360-570-6737*
Southwest Region *Primary Contact* *Back-up Contact*	*Angie Haffie* *DeeDee Jones*	*360-905-6706* *360-905-2186*
South Central Region *Primary Contact* *Back-up Contact*	*Craig Broadhead* *Geoff Gray*	*509-577-1751* *509-577-1756*
Eastern Region *Primary Contact*	*Dean Smith* *Tammie Williams*	*509-324-6136* *509- 324-6134*

Best Management Practices for Unprotected Species

Best management Practices for unprotected species are listed below. Nests, eggs, and adults of unprotected species can be removed without a permit and there are no timing restrictions. However, humane practices for removal are recommended and include:

- Conduct removal or relocation in an appropriate, humane manner that will not offend the public.
- Carefully remove/relocate nests or young to nearby parts of the bridge.
- If removal of young is necessary, take them to an appropriate rehabilitation center or other organization;
- As a last resort consider euthanasia of young birds.
- Use exclusion materials (e.g., porcupine wire, string monofilament) to prevent occupancy.

The following pages describe common species that occupy bridges, their identification, ecological characteristics, and appropriate practices for dealing with them during bridge inspections.

PEREGRINE FALCON

Photos: Bob Sallinger:ODOT, Dr. Douglas A. Bell: California Academy of Sciences and Kengo Sakamoto: WSDOT

Adult Peregrine Falcon

Nestling Peregrine Falcons

A Peregrine occupied bridge site

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW.

- **ID Characteristics:** Peregrines have lighter under parts (tawny/cream) barred with slate or dark blue, a white throat and ear patch, and dark coloration (black-gray-brown) on the head, nape, sideburns/cheeks, wings, and back. Their wings are long and pointed, and their tails are long and narrow with black bands, and tipped in white. Peregrines have yellow legs and feet. Peregrines are slightly larger than crows, with a 38-46-inch wingspan.
- **Habitat Requirements:** Peregrines do not build nests; they lay eggs on bare ledges (eyries), commonly located on manmade ledges on buildings and bridges. On bridges, nests are typically located below bridge deck on a flat surface and are sometimes inside structural cavities on bridge girders. Peregrines prey on shorebirds, waterfowl, small- to medium-sized birds (doves, pigeons, songbirds), and occasionally bats. They tend to capture their prey in mid flight. During winter months, peregrines tend to be in areas with large concentrations of prey species like coastal marshes, rivers, lakes, intertidal mudflats, estuaries, and large open-water wetlands. Eyries are usually within ¼ to ½ mile from these resources.
- **Signs of occupied bridge structures include:** The presence of peregrines or a pair of peregrines at or near bridge site. The presence of large numbers of pigeons, starlings, swallows, and other potential prey species, or accumulations of bones from peregrine prey on bridge structure or ledges.
- **Sensitive Periods:** Nesting season is from February 1 through July 15 under normal circumstances.[1] Egg incubation takes 33-35 days and young take approximately 60 days to fledge the nest (young leave the nest). \
- **Appropriate Practices:** Inspect bridges outside nesting season if possible. If inspection during nesting season is required, avoid activities within the sensitive nest zone (determined by WSDOT biologist) until incubation is completed and young have fledged. If inspection during

[1] The time frame given is the typical time of year that birds may be nesting in Washington. There are a number of factors that can influence how long it takes them to complete their cycle. Some birds start later and get done later in the time period while other birds start right at the beginning of the nesting period and may be done early, some may lose one set of eggs and begin all over- taking up most of the nesting season. Once the birds have fledged and are capable of flying, there would be no concerns about inspection activities except for safety of the inspectors.

incubation/fledging period is required, inspect the portions of bridge that are not used for nesting using biologist support to define a site-specific buffer zone. If inspection near active nest is required, work with the regional biologist to create a site-specific inspection plan.

SWALLOWS (BARN, CLIFF, AND VIOLET GREEN)

Photos: Bill Horn (Birds of Oklahoma), Dr. Lloyd Glenn Ingles, California Academy of Sciences, and Denny Mallory from http://birds.cornell.edu/birdhouse/bird_bios/speciesaccounts/vigswa.html

Barn Swallow (far left). Cliff swallow (left center). Violet Green Swallow (right center). Cliff swallow *Nests (far right) are mud nests with tunnel-like entrances. Barn swallow nests are more cup-shaped.*

- **Protected Under:** Migratory Bird Treaty Act, Chapter 77.15 RCW
- **ID Characteristics:** Both barn and cliff swallows are 5 ¾ to 7 ¾ inches in length. Barn swallows are the only swallow in the United States with a long, deeply forked tail. Barn swallows have steel blue plumage on the crown, wings, back and tail. Their forehead, throat, breast and abdomen are rust colored. Females are usually duller than males. Cliff swallows are the only square-tailed swallow in most of North America. Cliff swallows have a pale orange-brown rump, white forehead, dark rust-colored throat, and steel-blue crown and back. Violet-green swallows have non-glossy, velvety green or greenish bronze uppers, and are white underneath. In addition there is a white patch on the face of the violet-green swallow extends above the eyes and there are two white patches on its rump. Compared to the males, female violet-green swallows are dull in color.
- **Habitat requirements:** Swallows regularly build mud nests in protected sites (under eaves, in corners-of walls and beams, cavities in natural cliff faces, etc.) attached to buildings and other man-made structures. Barn swallows have shallow cup shaped nests composed of mud pellets that can contain organic materials like grass stems, horse hair, feathers, etc. Cliff swallow nests are gourd shaped enclosed structures, often with an entrance tunnel that opens downward. Cliff swallow nests are also composed of mud pellets, and on the inside are lined with grass, hair, and feathers. Barn swallows nest as single pairs or in loose colonies whereas cliff swallows nest in colonies of up to several hundred pairs. Violet-green swallows breed as single pairs in tree cavities or the openings within walls or roofs of buildings, or else in groups in rock crevices. Violet-green swallows build nests three to five meters off the ground. Violet-green swallows may use old swallow nests, or construct nests with stems, twigs, grasses, fur, and horsehair. Swallows prey on bees, beetles, flies, and other insects.
- **Signs of occupied bridge structures include:** Look for shallow cup shaped or gourd shaped mud nests, lined in grass, hair, and feathers, or look for a nest constructed of stems, twigs, grasses, fur, and horsehair.
- **Sensitive Periods:** Nesting periods are June 1 to September 15 for barn swallows; May 21 to August 15 (and potentially until September 15 where double-brooding occurs) for cliff swallows; mid-April to July 15 for violet green swallows under normal circumstances. Egg incubation takes 15-16 days and young take 25-37 days to fledge the nest for all these swallows.
- **Appropriate Practices:** No seasonal restriction provided nests with eggs and young are not removed or harmed and activities do not prevent parental care of eggs or young (e.g., activities that would drive birds off their nests long enough to chill and kill the eggs, or prevent adults from feeding the young for a period of time). If nests contain eggs or young, and activities require removal or moving of nests, contact the regional biologist for assistance.

OSPREY

Photos: Patricia McQueary, WSDOT and Glenn Vargas, California Academy of Sciences

Ospreys and nest (left). Example of osprey coloration (right).

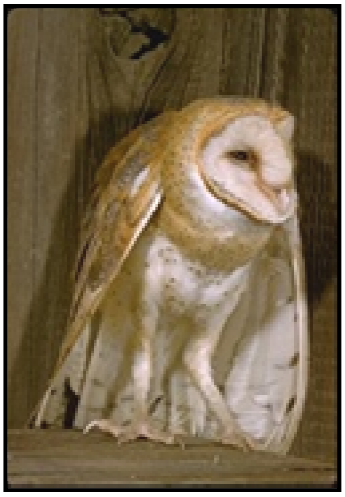
Osprey nest: Note large platform like nest (left) and perched adult (right).

- **Protected Under:** Migratory Bird Treaty Act, Chapter 77.15 RCW
- **ID Characteristics:** Ospreys have dark brown backs, white heads and necks (with dark streaks down cheeks and down sides, occasional streaks of brown on crown), white under parts (may have brown streaks), and bluish-gray/greenish-white legs and feet. Their tails are light colored with fine dark bands terminating in a broad dark band edged in white. When perched, their wings extend beyond the tail. In flight, wings appear white with dark patch at the sharp bend (wrist) of the wing. Ospreys are 21-24 inches long, 54-72 inch wingspan.
- **Habitat requirements:** Ospreys commonly nest in standing trees near water and occasionally on manmade structures such as bridges. Nests on bridges are normally located on the high point of the bridge – on the superstructure. Nest size averages three feet in diameter and one to two feet in depth and consists of sticks (one-half to one inch in diameter), as well as any other readily accessible materials (seaweed, cornstalks, boards, nets, rope, cans, etc.). Ospreys feed almost exclusively on fish but will occasionally take prey such as small mammals, birds, and reptiles.
- **Signs of occupied bridge structures include**: The presence of individual osprey or pairs of osprey at or perched near the bridge site. Nests are used year after year, so look for a very large nest (3 feet in diameter) on top of the bridge structure. If a nest used in previous years is destroyed, birds will not use same site, but will likely try to build a nest near the original site.
- **Sensitive Periods:** Nesting activities occur between April 1 and September 30 under normal circumstances. Egg incubation takes 38-48 days and young take 49-56 days to fledge the nest.
- **Appropriate Practices**: Inspect bridges outside nesting season, if possible. If inspection during nesting season is required, avoid activities within the sensitive nest zone (determined by WSDOT biologist) until incubation is completed and young have fledged. If inspection during incubation /fledging period is required, inspect the portions of bridge that are not used for nesting using biologist support to define a site-specific buffer zone. If inspection near active nest is required, work

with the regional biologist to create a site-specific inspection plan. If necessary, temporary removal of nest may be possible, but must be coordinated with WDFW. Permanent removal will require approval from WDFW.

BARN OWL

Photos: George W. Robinson, California Academy of Sciences and Washington State Department of Transportation



Adult (left), nest (center) and nestling (right) barn owls

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW

- **ID Characteristics:** Barn owls have a heart-shaped face and pale tawny and white colored plumage. A barn owl's back and head may be grayish and flecked with black and white. The breast may have sparse black flecking but plumage is white on males and tawny-white on females. The legs and feet of barn owls are gray and the eyes are dark brown. Barn owls are 16-inches long, with a wingspan of 42-inches.
- **Habitat Requirements:** Barn owls prefer open habitats consisting of grasslands, meadows, pastures, open woodlands, and cropland. Their primary prey is small rodents. Barn owls nest in a variety of places including the eaves of old buildings and other structures (barns, silos, bridges), hollow trees, stream or canal banks, rock cliffs, and underground burrows. No effort is made to build or line the nest. Eggs are laid on whatever debris is accumulated at the "nest" site. At nest sites it is common to find a slight depression in existing debris filled with "owl pellets" or compact pellets composed of fur, bone, feathers and other indigestible materials from prey.

- **Signs of occupied bridge structures include:** The presence of adult owls or owl pairs at or near bridge site. Also look for the presence of eggs or owlets or accumulations of owl pellets on bridge structure or ledges.
- **Sensitive Periods:** Nesting occurs from March 1 until July 31 for barn owls under normal circumstances. Egg incubation takes approximately 30 days and young take 56-70 days to fledge the nest.
- **Appropriate Practices:** No seasonal restriction provided nests with eggs and young are not removed or harmed and activities do not prevent parental care or eggs or young (e.g., activities that would drive birds off their nests long enough to chill and kill the eggs, or prevent adults from feeding the young for a period of time). If nests contain eggs or young, and activities require removal or moving of nests, contact the regional biologist for assistance.

GREAT-HORNED, NORTHERN SAW-WHET, AND WESTERN SCREECH OWLS

Photos: Patuxent Wildlife Research Center, U.S. Geological Survey

Great-horned owl (left), northern saw-whet owl (center) and western screech owl (right)

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW (for all three species)

- **ID Characteristics:** Great horned owls are large owls with prominent ear-tufts, prominent facial disks, and bold yellow eyes. They have reddish-brown facial disks bordered by black with a lower border of white. Their plumage is a mix of mottled brown with white-and-black barring, with some white at the throat. There is much variation in the darkness and shade of these colors across their range. Great horned owls are 20-inches long, with a wingspan of 55-inches. Northern saw-whet owls are small, chestnut-brown owls with prominent white markings on the folded wings and brown-and-white striped chests and bellies. They have no ear-tufts. Their eyes are yellow, and their white eyebrows connect in a 'Y' over their beaks. Throats are white. Northern saw-whet owls are 7-inches long, with a wingspan of 17-inches. Western Screech-Owls are small owls with yellow eyes, dark bills, and ear-tufts that are often but not always raised. They have intricately streaked gray or gray-brown plumage, with owls of the eastern Washington subspecies lighter in color than those of the western. Western screech owls are approximately 8-inches long, with a wingspan of 22-inches.
- **Habitat Requirements:** Great horned owls are found in more varied habitats than any other owl in North America. Their preferred habitat is open or fragmented woodland with treeless areas nearby. They often use wooded habitats, especially during the breeding season when trees or heavy brush provide cover. They also nest on cliffs and manmade structures such as bridges on flat ledges or in large cavities. Most of their food consists of mammals such as rabbits, skunks, and large rodents. They will also forage on birds (including other owls) and to a lesser extent fish, reptiles, amphibians, and even large insects. Great horned owls do not build their own nests, but use abandoned nests built by hawks, crows, magpies, herons, or other large birds. They add no new nest material. Northern saw-whet owls inhabit all forest types including coniferous, broadleaved, and mixed and occasionally are in riparian areas where they may nest in cavities on bridge structures. They do not build nests, but instead use existing cavities and nesting materials from other animals or birds. Their primary prey is small rodents, especially deer mice. The western screech-owl are common in open woodlands, forested stream-sides, deserts, suburban areas, and parks. Similar to saw-whet owls the screech-owls use existing nest cavities in trees, nest boxes, and cavities on bridge structures. They do not add additional material to the nest. Western screech-owls feed on insects, crustaceans, reptiles, amphibians, small mammals, and occasionally birds.

- **Signs of occupied bridge structures include:** The presence of adult owls or owl pairs at or near bridge site. Also look for the presence of eggs or owlets or accumulations of owl pellets on bridge structure or ledges.
- **Sensitive Periods:** Nesting occurs from March or April through September or as late as October for great horned owl. Great horned owl egg incubation takes approximately 26-35 days and young take 35 days to fledge the nest. Northern saw-whet owls nest from March to July. Saw-whet owl egg incubation takes approximately 26-28 days and young take 27 to 34 days to fledge the nest. Northern saw-whet owls nest from March to early June. Western screech-owl egg incubation takes approximately 21-30 days and young take 27 to 34 days to fledge the nest.
- **Appropriate Practices:** No seasonal restriction provided nests with eggs and young are not removed or harmed and activities do not prevent parental care or eggs or young (e.g., activities that would drive birds off their nests long enough to chill and kill the eggs, or prevent adults from feeding the young for a period of time). If nests contain eggs or young, and activities require removal or moving of nests, contact the regional biologist for assistance.

CANADA GOOSE

Photos: Don Getty, California Academy of Sciences and Lorraine Elrod, California Academy of Sciences

Canada geese ***Canada Goose Gosling***

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW

- **ID Characteristics:** The Canada goose is one of North America's most common geese. They are large birds, ranging in length from 25" to 45". Canada geese are brown across the wings and back with a white to dusky brown breast. Perhaps the most notable characteristic of the Canada goose is its black head and neck with a white "chin strap". The legs, feet, and bill are black. Its call is a distinctive "honk".

- **Habitat Requirements:** Canada geese usually breed in open or forested areas near water. As populations have grown, this species has become increasingly common in suburban parks and urbanized locations near water. These geese may be found in varied habitats including marshes, lakes, streams, wetlands, tundra, rivers, forest bog, prairie sloughs, and suburban parks. Although generally tolerant of disturbance and human presence, Canada geese may become aggressive when approached if a nest site or nestlings are nearby. The Pacific population of Canada geese generally winters in relatively close proximity to nesting grounds and nesting pairs often return to the same site annually. Nests consist are composed of grasses and other vegetation and lined with downy feathers. Typically, 4 to 8 large, white eggs are laid.

- **Signs of occupied bridge structures include:** The presence of adult geese or pairs of adult geese on the bridge. Large deposits of fecal material and/or downy feather litter. Canada geese generally nest on the ground but will occasionally use other platforms, including abandoned osprey and eagle nests. On bridges, nesting Canada geese will use large flat structures such as flat concrete pier footings for their nests.
- **Sensitive Periods:** Canada geese are most sensitive to disturbance during nesting (May through June). Egg incubation takes 25-30 days and young take 40-73 days to fledge the nest.

- **Appropriate Practices:** No seasonal restrictions provided nests with eggs and young are not removed or harmed and activities do not prevent parental care or eggs or young (e.g., activities that would drive birds off their nests long enough to chill and kill the eggs, or prevent adults from feeding the young for a period of time). If nests contain eggs or young, and activities require removal or moving of nests, contact the regional biologist for assistance.

CORMORANTS (BRANDT'S, DOUBLE-CRESTED & PELAGIC)

Photos: Don Getty-California Academy of Sciences, Alden M. Johnson-California Academy of Sciences, Sherry Ballard-California Academy of Sciences

Double-Crested Cormorant

Brandt's Cormorant

Pelagic Cormorant

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW

- **ID Characteristics:** Pelagic cormorants are the smallest of the Pacific Coast cormorants with lengths ranging from 25" to 30". This cormorant is black in coloration with green eyes and a red pouch under its slightly hooked bill. During courtship, the pelagic cormorant has a bright white patch on its flanks. Brandt's cormorants are typically slightly larger than the pelagic cormorants, ranging in length from 33" to 35". These birds are dark in coloration and slightly iridescent with a cobalt-blue throat pouch. Brandt's cormorants develop white plumes on the face and back during the breeding season. Double-crested cormorants range in length from 30" to 36". These cormorants are black with an orange beak and throat patch.

- **Habitat Requirements:** Cormorants are typically found near marine waters (double crested cormorants may also be found along inland freshwaters) where they forage for fish. The pelagic cormorant is typically found in coastal waters and bays. It nests in colonies on narrow cliffs and rocky islets and on manmade structures, such as bridges, traveling inshore or far from shore to feed. Brandt's cormorants generally prefer a gentle slope for nesting rather than the cliff habitats preferred by pelagic cormorants. Double-crested cormorants are widespread in North America. This species prefers wider cliff ledges or cliff tops for nesting. Double-crested cormorants will fly over land, while the other two species typically prefer staying over water. Cormorants are often observed perching on pilings, bridges, and other artificial or natural structures with wings outstretched (See photo above left). This is to dry their feathers following dives into the water to pursue fish.

- **Signs of occupied bridge structures or cliff faces include:** Deposits of fecal material on pilings, posts, and the bridge superstructure in areas providing suitable perches for cormorants. Large deposits of fecal material may exacerbate corrosion of metalwork. Pelagic cormorant colonies are very mobile while the other species tend to be more stationary. In 2003, a pelagic cormorant colony was documented on Port Washington Bridge, which is over marine water.

- **Sensitive Periods:** Pelagic cormorant nests have been observed at Port Washington Bridge from March 15 to October 15. Most Pelagic cormorants breed from April-September; their nesting is asynchronous. Egg incubation takes 26-31 days and young take 28-56 days to fledge the nest. Brandt's and double-crested cormorants have not been observed nesting on bridges in Washington to

date but have been observed roosting on several bridges. Brandt's cormorants breed from May to June, and double-crested cormorants breed in May. Brandt's cormorant egg incubation takes 25-29 days and young take 35-42 days to fledge the nest. Double-crested cormorant egg incubation takes 21-28 days and young take approximately 70 days to fledge the nest.

- **Appropriate Practices:** Inspect bridge outside of nesting season. If inspection during nesting season is required, work with regional biologist to create a site-specific inspection plan. If there are large numbers of cormorants on a bridge, inspection of the underside will be difficult if not impossible to complete without mortality of young during the nesting season. Nesting debris can be removed after the nesting season. Most nest materials fall off the bridge and are no longer visible after fledging occurs.

GULLS

Photos: Gerald and Buff Corsi-California Academy of Sciences, Marguerite Gregory-California Academy of Sciences, John White- California Academy of Sciences

Western Gull

Gull Nestlings

Herring Gull

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW

- **ID Characteristics:** Approximately 14 species of gulls occur along the Pacific Coast, Puget Sound, and lakes and rivers in Washington State. Generally, gulls range in size from 12" to 27". These stout, grayish birds have long wings and graceful flight. Coloration of beaks, legs, and feet are often good characters for distinguishing among species. Immature birds are commonly mottled brown and may be difficult to identify to species.

- **Habitat Requirements:** Gulls generally nest in colonies near water. They often utilize piles, bridges, and ferry terminals for perching habitats and as foraging sites (often feeding on human refuse) and gulls have been noted nesting in greater numbers on roofs and ledges of buildings and other structures where human activity is high. Gulls may be found congregating in a wide variety of habitats including beaches, areas adjacent to marine waters, lakes and rivers, islands, cliffs, meadows, garbage dumps, golf courses and buildings where dependable supplies of food are located nearby. Many gulls return to the same nesting site each year.

- **Signs of occupied bridge structures include:** Presence of adult birds or pairs of adult birds on or around bridges or ferry terminals. Deposits of fecal material. Nests are generally circular, commonly constructed of grasses, and lined with moss or other vegetation.

- **Sensitive Periods:** Gulls in Washington State typically nest from May 1 - June 30. Egg incubation for gulls vary, but typically take 24-30 days and young typically take 35-60 days to fledge the nest.

- **Appropriate Practices:** No seasonal restrictions provided nests with eggs and young are not removed or harmed and activities do not prevent parental care or eggs or young (e.g., activities that would drive birds off their nests long enough to chill and kill the eggs, or prevent adults from feeding the young for a period of time). If nests contain eggs or young, and activities require removal or moving of nests, contact the regional biologist for assistance.

OTHER MARINE BIRDS

Photos: Tara Chestnut-WSDOT, RonLeValley-Pacific Seabird Group, Greg Lasley

Pigeon Guillemot

Rhinoceros Auklet

Nest exclosure for Pigeon Guillemot

- **Protected under:** Migratory Bird Treaty Act, Chapter 77.15 RCW

- **ID Characteristics:** Pigeon guillemots and rhinoceros auklets are similar in size, between 10.5 and 11.5 inches long, although they are shaped differently. The pigeon guillemot breeding plumage is dark all over, except for a white wing patch. The wing patch is visible when the bird is at rest and in flight. In winter, its plumage is mottled. It has a white neck and underparts, dark areas on face, a gray mottled back, and black wings and tail. The bill is thin and dark. Red legs, feet and inside of mouth contrast dramatically with the breeding plumage. The rhinoceros auklet has a very distinct bill during the breeding season, which explains the birds' name. It is a gray bird with a white belly. The rhinoceros auklet has two white plumes on face, one behind the eye and the other behind the bill. The plumes and hornlike projection at base of upper mandible are only present during the breeding season. It has a thick, pointed, yellow bill that is duller in juveniles and in the winter.

- **Habitat Requirements:** These birds generally roost and nest in colonies on cliffs and steep slopes. Pigeon guillemots often utilize bridges and ferry terminals for perching during the day and roosting at night. They may utilize bridge structures for nesting. Typically nest structure consist of a pile of debris, pebbles, or shell scraps. During nesting, daytime activity at the colony increases. Courtship begins in early spring. Pigeon guillemots have a prolonged courtship, which may aide in the identification of potential nest sites before egg laying occurs. They usually lay two eggs. Rhinoceros auklets may be observed in marine waters adjacent to bridges, however they seldom utilize bridge structures for nesting. Nests on bridges are typically on level surfaces, such as ledges below the bridge deck. Auklets may line nest sites with grass, twigs, and/or moss. Both species are marine birds that remain on the water during the day and return to a colonial roost at night.

- **Signs of occupied bridge structures include:** Presence of adult birds or pairs of adult birds on or around bridges. Deposits of fecal material or nesting materials.

- **Sensitive Periods:** Nesting activities for pigeon guillemot typically occur between April 1 and August 31 under normal circumstances. Egg incubation for pigeon guillemot takes 30-32 days and young take 28-39 days to fledge the nest. Rhinocerous auklet nesting occurs between April 1 and September 15 under normal circumstances. Egg incubation for auklet takes 39-52 days and young take 48-55 days to fledge the nest. Both species nest in colonies.

- **Appropriate Practices:** Pigeon Guillemots have nested on the Hood Canal Bridge and may nest on other Puget Sound bridges. No rhinoceros auklet have been observed nesting on any WSDOT bridges to date. If inspection during nesting is required, avoid activities within the sensitive nest zone (determined by WSDOT biologist) until incubation is completed and young have fledged. If inspection during incubation/fledging period is required, inspect the portions of bridge that are not used for nesting using biologist support to define a site-specific buffer zone. If inspection near active nest is required, work with the regional biologist to create a site-specific inspection plan.

BATS

Photos: Dr. Robert Thomas and Margaret Orr, California Academy of Science, Dr. Lloyd G. Ingles, Cal. Academy of Sciences, and J.Scott Altenbach

Big Brown Bat

Long-legged Myotis

Pacific Townsend's Big-eared Bat

- **Protected Under:** Chapter 77.15 RCW,.

- **Western WA Species:** Keen's myotis, Townsend's big-eared bat (Pacific Townsend's big-eared bat, pale Townsend's big-eared bat), long-legged myotis, long-eared myotis, little Brown bat, Yuma myotis, California myotis, big brown bat, silver-haired bat, hoary bat.

- **Eastern WA Species:** fringed myotis, small-footed myotis, pallid bat, spotted bat, western pipistrelle.

- **Habitat Requirements:** Bats generally live in colonies of 20 - 1,000 or more individuals. All bats in WA State are insect eaters, so in the winter months bats either migrate or find suitable hibernation roosts (usually in caves and abandoned mines). In April, females seek out warm nursery roosts where they birth and rear their pups (usually only one, born in May - July). Males live singly or in small groups in cooler roosts during this time. Juveniles mature quickly and learn to fly in 3-6 weeks. Nursery colonies break up in August, and by September, bats are usually migrating to warmer climates or winter roosts. Mating occurs in wintering or hibernation habitats.

    - **Preferred Bridge Habitat:** Because of declines in the habitats bats once used by bats for day and nighttime roosting (caves, tree crevices, etc.) may species have begun roosting in bridge and culvert structures. Research conducted by Bat Conservation International indicates that bats prefer concrete bridges to wooden or steel bridges. Specific bridge types preferred by bats include parallel box beam bridges and cast in place bridges made of pre-stressed girder spans. Most species preferred vertical crevices that were sealed at the top, at least 6-12 inches deep, 0.5 to1.25-inches wide, and 10 or more feet above the ground. Typically roosts are not located above busy roadways, but often they are located on small to medium-spans over creeks and rivers (where access to insects is maximized). Day roosts are places that protect bats from predators and weather while resting or rearing young. These roosts are usually located in expansion joints or other crevices, although some species may roost in the open, between spans. Night roosts, where bats digest their food between nightly foraging outings, are usually located in open spaces between bridge support beams that are protected from the wind. Bats are also attracted to bridges with a large thermal mass that remains warm at night.

- **Signs of occupied bridge structures include:** The presence of preferred bridge characteristics, visible bats, audible chirping, droppings or stains from urine or body oils at or below roost. Roosts

are usually located under the bridge, on or below the warmest locations (between bridge beams below the bridge deck, vertical concrete surfaces, etc.). A high-powered light and binoculars can help you inspect dark crevices.

- **Sensitive Periods:** Sensitive periods span from April - September, when nursery roosts are present in Washington State. Hibernation roosts are not likely to occur in Washington State on bridge structures.

- **Appropriate Practices:** No seasonal restrictions for bats provided that breeding adults and young are not removed or harmed and activities do not prevent parental care of young. Disturbance to bats should be minimized. If young are present and activities require removal, contact the regional biologist for assistance. In addition, bats are the primary reservoir for rabies in Washington State, therefore safe removal practices must be used.

BUSHY-TAILED WOODRATS (PACK RATS)

Photos: Barbara Johnstone and Harold Redmond, WSDOT Bridge Preservation Office

Bushy-Tailed Woodrat

Woodrat nests

- **ID Characteristics:** 13-3/4" to 18-3/4" in length (including their 6-9 inch bushy tails). This species is grayish brown to reddish color on the back and lighter to white colored on underside. Coat color does vary geographically. Bushy-tailed woodrats have relatively large ears.
- **Habitat Requirements:** Bushy-tailed woodrats live among rocks, cliffs, fallen trees, hollow trees, and buildings or structures. Woodrats are distributed statewide, and can be present in open or forested habitats. Woodrats are nocturnal foragers and generally are quiet during the day. Woodrat nests are mounded structures located in sheltered sites. Nests are 15 inches to 3 feet in diameter (up to 2.5 feet in height) with cup-like depressions or nests ranging in size from 6-8 inches in diameter. Nests can be located near the ground, or high in trees or structures (including bridges) (10-50 feet from the ground). Nests are generally occupied by one individual or a female and her young. Around nests urine accumulation can often appear as white calcified stains. Droppings can be tar-like in appearance or typical rodent droppings (pellet-like). Woodrats begin mating in January and February with the bearing of young beginning in March. Young can be born through July, and usually take about a month to mature. Woodrats often live in loose "family groups" and female woodrats often return to the same nesting site each year.
- **Signs of occupied bridge structures or cliff faces include:** White stains from urine or droppings. Mounds of sticks and debris in sheltered locations or ledges that are sometimes very large.
- **Sensitive Periods:** Sensitive periods span from March through August, when young are likely to be present in nests.
- **Appropriate Practices:** Nests may be removed by permit from WDFW, however the animals may not be harmed. If young are present and activities require removal, contact the regional biologist for assistance. Caution should be used when working in closed quarters near woodrat nests. Although disease transmission is uncommon, woodrats can carry hantavirus and sylvatic plague (a modern form of bubonic plague). Fortunately these diseases are uncommon in Washington. Proper personal protective equipment should be used when disassembling nests or when prolonged exposure will occur.

OTHER MAMMALS (OPOSSUM, RACCOON, FERAL HOUSE CATS)

Photos: Robert Potts-California Academy of Sciences, Alden M. Johnson-California Academy of Sciences, Joseph Dougherty, Barbara Johnstone and Harold Redmond, WSDOT Bridge Preservation Office

Left to Right: Opossum defensive posture, feral house cats in rural setting, adult raccoon.

- **Protected Under:** Chapter 77.15 RCW (Opossum and raccoon). Feral cats are not protected.
- **ID Characteristics:** Virginia opossum, raccoon and feral house cats are extremely common and readily identifiable. These animals occupy a broad range of habitats and are only absent in areas of high elevation. Opossums did not occur in Washington until they were introduced in the mid 1900s, and are still absent from many areas. House cats were introduced with early settlers.
- **Habitat Requirements:** Raccoons and opossum use forested habitat near water bodies in natural areas for cover, nesting, and foraging. In natural areas, they nest in trees and forage on insects, slugs, and seafood (raccoon only). In urban areas, they take cover and nest in cavities in sewers, under porches, in sheds, and on bridges structures. They forage for food in garbage cans and water bodies in the urban areas. Feral domestic cats use similar habitats as raccoons and opossum in the urban area.
- **Signs of occupied bridge structures:** Adults or young are observed on bridge ledges and in cavities. Fecal droppings may be observed on ledges. These species will occupy bridges when they are birthing and rearing young.
- **Sensitive Periods:** Occur for these animals while the young are not mobile and remain in the nest. For raccoons this would span from late April through August, February through July for opossum, and potentially at any time for cats.
- **Appropriate Practices:** No seasonal restrictions for protected species, opossum and raccoon, provided that breeding adults and young are not removed or harmed and activities do not prevent parental care of young. If young are present and activities require removal, contact the regional biologist for assistance. For feral cats, which are unprotected species, no permits are required for removal, however humane and safe removal is recommended. Recommended practices for removal are provided on page 4. Use caution when these animals are encountered as they can become aggressive when surprised, especially when they are in closed quarters with young. Generally, they will hiss or growl when disturbed. Rarely will they attack if left unprovoked and allowed to escape on their own. Most adults and young can be scared away. These mammals can carry several diseases, including rabies. Rabies is very uncommon Washington. Since 1939, only two human cases of rabies have occurred in Washington, one in 1995 and one in 1997. Foxes, coyotes, skunks, raccoons, and dogs have been documented as reservoirs for rabies in other parts of the United States.

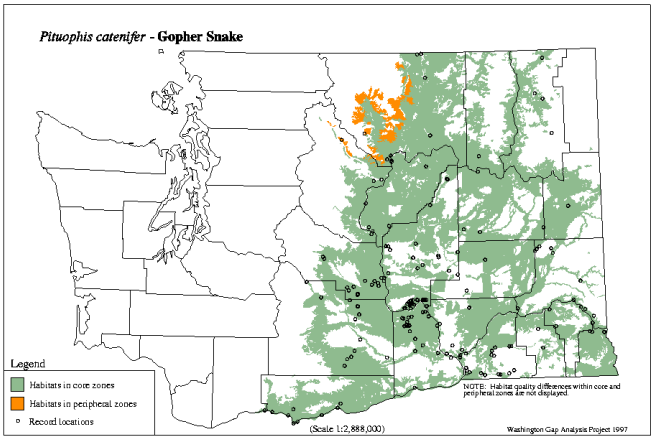
Snakes (Gopher and Rattle Snakes)

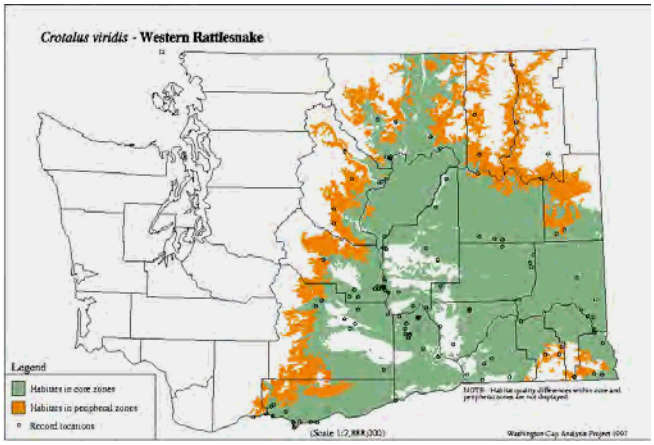
Photos: John H. Tashjian- *2001 California Academy of Sciences, William Leonard 1996.*

Gopher (Bull) Snake

Rattlesnake

- **ID Characteristics:** Gopher snakes and rattlesnakes superficially look similar to each other. Both are eastside species with largely overlapping ranges. They both have dark blotches on a lighter background. However, gopher snakes are much more slender with a small head and long tapering tail. They also have a dark mask that extends across the head and through the eyes. Gopher snakes are harmless and lack venom. Rattlesnakes are chunky and of course have the telltale rattle at the end of its tail. Rattlesnakes are pit vipers and have poison that can be injected into the skin if bitten. There is only one species of rattlesnake in Washington, the western rattlesnake. Gopher snakes mimic rattlesnakes when threatened. They flatten their head and body, coil, and shake their tail, which also leads to mistaken identity, especially if they are among dry vegetation that makes noise when moved. Rattlesnakes do not always rattle when disturbed.





- **Habitat Requirements:** Rattlesnakes are found in drier regions with low or sparse vegetation. They prefer rocky areas including riprap under bridges. Gopher snakes are found in a wider variety of eastside habitats including dry forests and agricultural areas, but they also use riprap under bridges or along waterbodies.
- **Signs of occupied bridge structures:** No obvious signs are apparent. These species will occupy bridges and riprap below bridges to hide, and to escape summer heat during the day or to absorb warmth when the temperature is cool. They are most likely to occupy the riprap below the bridges (near water sources) instead of use the bridge structure itself.

- **Sensitive Periods:** The most sensitive period for these snakes is late spring and summer months when they may come out to absorb sun on riprap below bridges. Nesting typically occurs during summer months (June through August).
- **Appropriate Practices:** It is best to avoid handling a snake if you do not know what species it is. Tapping on the outside of the structure will alert snakes to your presence. If a rattlesnake is encountered, evaluate if the inspection can be safely conducted if it is left alone. Snakes can be removed from an area with snake tongs or hooked sticks and placed in a cooler or bucket while the work is being done. A snake can only strike 2/3 the length of its body. Many bites are actually dry bites; no venom is injected. Snakes, including rattlesnakes, are beneficial predators and help control small mammal populations. They should not be harmed if encountered. Contact a regional biologist for assistance.

STARLINGS

Photos: Dr. Dan Sudia on the Florida Natural History Museum's web site http://www.flmnh.ufl.edu/natsci/ornithology/sephotos/birdpint.htm

Adult non-breeding coloration (left), and adult breeding coloration (right).

- **Not Protected.**

- **ID Characteristics:** Starlings have a short; square tail, pointed triangular wings, and straight pointed bill. Juveniles are predominantly gray with a pale throat, gray-black bills, and dark eyes. Adult non-breeding birds have black to green plumage intricately spotted with white with wing feathers being edged in a lighter (almost orange) color. Breeding adults appear an oily greenish- black color and have a yellow bill. Starlings are 8.5 inches long with a wingspan of 16 inches.

- **Habitat Requirements:** Starlings are found in virtually all human-modified habitats, often feeding and roosting in huge flocks. They nest in any cavity or hole, in trees, rocks, nest boxes or man-made structures. A starling nest consists of an untidy accumulation of stems, leaves, and other plant material, the cup of which is lined with feathers, wool, moss, etc. Starlings feed mainly on berries and insects. Breeding season generally begins mid-April and starlings are known to be single or double brooded which extends the incubation and nestling period through mid-June.

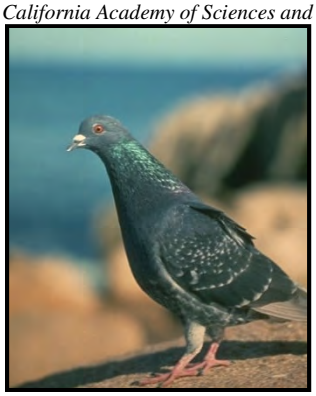
- **Signs of occupied bridge structures include:** The presence of a loose accumulation of plant material with a cup lined with feathers, moss, and other materials located in cavities, nooks, or crevices in the bridge or cliff face.

- **Sensitive Periods:** Nesting occurs from March 1 until July 31 under normal circumstances. Egg incubation takes 12-14 days and young take 18-21 days to fledge the nest.

- **Appropriate Practices:** Nests, eggs, and adults of unprotected species can be removed without a permit and there are no timing restrictions. Humane treatment during removal is recommended. Recommended practices for removal are provided on page 4.

PIGEONS (ROCK DOVES)

Photos: Chan Robbins Dr. Lloyd Glenn Ingles, California Academy of Sciences and Alden M. Johnson, California Academy of Sciences




Rock Dove (left and middle) a non-protected species and the similar Band-Tailed Pigeon (a protected species) (Right.) Note the white collar and longer neck of the Band-Tailed Pigeon

- **Not Protected:** (However, Band-Tailed Pigeons **are** protected under the Migratory Bird Treaty Act. Band-tailed pigeons are found in forested areas and nest in trees. Make sure you know what pigeon you are dealing with). See photos above to help you differentiate between rock doves and band-tailed pigeons.

- **ID Characteristics:** Rock doves are the pigeons commonly found in cities and nest in a wide variety of sites including cliffs, bridges, and buildings. These birds have a great variety of plumages. Rock dove have longer wings and pointier wingtips than other pigeons but in general they are a stocky, short- necked and tailed bird. Rock doves are 12 inches in length with a wingspan of 28 inches.

- **Habitat Requirements:** Rock dove nests usually consist of a flimsy platform of grass and twigs placed on a deeply recessed horizontal surface (ledges or in man-made structures in areas of darkness. In some situations nests can be more substantial consisting of fine stems, roots, wire, etc. or rock doves may use another bird's nest as a platform. Their nests are usually 10-30 feet up, but may be as high as 100 feet or at ground level. Usually pigeons nest colonially. Most pigeons pick food from the ground (seed, fruit, etc.) from ground.

- **Signs of occupied bridge structures include:** The accumulation of excrement (white or gray streaking), or the presence of the following: flimsy platforms of grass and twigs, individual birds, or pairs or groups of birds on bridge structure or natural ledge.

- **Sensitive Periods:** Breeding and nesting season extends from March or April to August or September under normal circumstances. In urban situations this season may be extended. Nest sites are used repeatedly and nesting material is added for each new brood. A pair may raise 5 or more broods a year. Egg incubation takes 16-19 days and young take 25-26 days to fledge the nest.
- **Appropriate Practices:** Nests, eggs, and adults (not including band-tailed pigeons) can be removed without a permit and there are no timing restrictions. Humane treatment during removal is recommended. Recommended practices for removal are provided on page 4.

ENGLISH HOUSE SPARROW

Photos: Patuxent Wildlife Research Center, U.S. Geological Survey and ***BirdWeb, Seattle Audubon Society***

Male house sparrow feeding at nest box

Male breeding plumage

Female feeding young

- **Not Protected.**

- **ID Characteristics:** The English house sparrow (house sparrow) was introduced from Europe and is among the most abundant and widespread sparrow in the world. It is chunky with a large head, short tail, and pink legs. Males in breeding plumage have streaked chestnut backs, chestnut heads, and gray crowns. They have black throats and breasts and light gray cheeks and underparts. They have black bills in summer and yellowish in the winter. Females have drab, grayish-brown, unstreaked breasts, with mottled buff and brown upperparts and light eye-stripes. Females have yellow bills. House sparrows are small birds measuring 4.25 inches in length.
- **Habitat Requirements:**. House sparrows are very common in areas of human habitation, in either urban or rural settings. They can survive on city sidewalks or in farmlands, but avoid extensive woodlands, native grasslands, and deserts away from human development. House Sparrows are primarily seedeaters but also eat insects, especially during the breeding season. They eat waste grain in agricultural areas and crumbs and rubbish left by humans in urban settings. House sparrows are monogamous and typically breed in cavities. They will use crevices in buildings, bridges, nest boxes, or other birds' nests, but if they are in an area with no available cavities, they nest in trees or shrubs, often in small colonies. Both sexes help build the nest, which is a globular nest of twigs, grass, and weeds, often lined with feathers. If the nest is in a cavity, the nesting material generally fills the volume of the cavity.

- **Signs of occupied bridge structures include:** The presence of adult sparrows or pairs of adult sparrows on the bridge or loose colonies of adults. Deposits of fecal material and/or downy feather litter. Both sexes help incubate eggs and feed young in the nest.
- **Sensitive Periods:** House sparrows typically start breeding in May and nest through July or August. They typically have two broods and often three. Egg incubation takes 10-13 days and young take 14-17 days to fledge the nest.

- **Appropriate Practices:** Nests, eggs, and adults can be removed without a permit and there are no timing restrictions. Humane treatment during removal is recommended. Recommended practices for removal are provided on page 4.