

DRAFT, UNDER CONSTRUCTION

Ospreys 101

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* information adapted from *Ospreys*, courtesy of the University of Toronto.



What hovers like a Ruby-throated Hummingbird, plunge dives like a Peregrine Falcon, and pops wheelies in mid-air as it homes in on a fish? The magnificent fish-eating hawk, the osprey. This statuesque species, once gravely endangered, has undergone a miraculous resurgence and occurs virtually worldwide, near coastlines, lakes, and waterways on every continent except Antarctica. Their diet consists almost solely of fish, enabling them to live virtually anywhere there are safe nest sites and shallow fish-laden waters.

Ospreys, in the order Accipitriformes, are set aside by themselves in the family Pandionidae (see *Osprey Classification below*). They are the only hawk that feeds almost entirely on fish and have many special adaptations that allow them to be master aerial fishermen.

Look for Ospreys:

Water & Abundant Fish & Nest Site = Osprey

Practically anywhere there is ample fish, shallow water, and appropriate nesting sites in North America, you'll find ospreys. Each year ospreys migrate to the Caribbean and South America and then back to their natal breeding grounds. A single osprey can log more than 160,000 miles during its 15-20 year lifetime!



Look for their steady wing beats and characteristic bent wings as they fish and their dramatic plunge dives from high in the air when a fish is spotted. Unable to dive to more than about three feet below the water's surface, Ospreys frequent shallow fishing grounds and usually hover over deep water only when fish school near the surface.

Ospreys nest in a wide variety of locations across the US—near rivers, lakes, reservoirs, lagoons, swamps, marshes, and estuaries—with long enough ice-free seasons to allow the young to fledge. The nest must be no more than 12 miles from abundant fish supplies and be built upon a support strong enough to hold the great weight of their bulky nests. Nests must always be elevated and preferably built over water to prevent predatory animals such as raccoons, opossum, and snakes from climbing up to the nest. Look for their distinctive, huge bulky stick nests—weighing up to several hundred pounds—on top of

tall trees, utility poles, channel markers, and osprey platforms. Once a nest is established, a pair will refurbish it year after year for the rest of their lives.

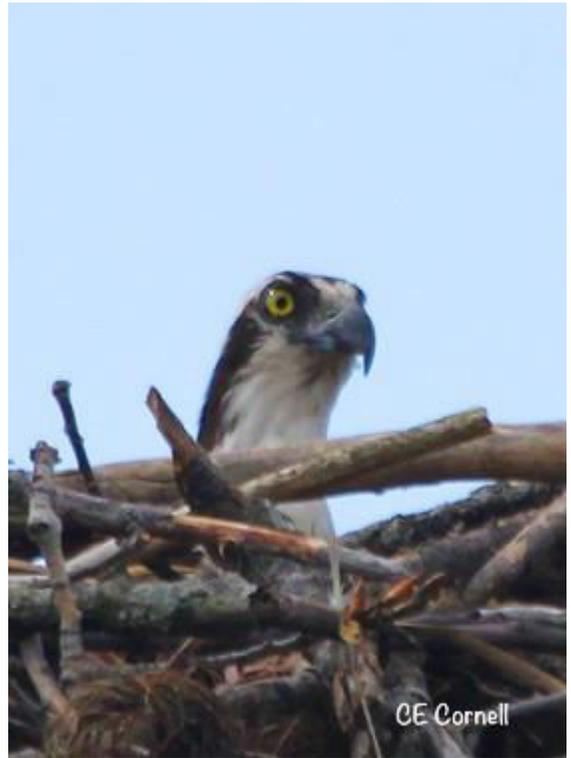
Platforms built to provide safe osprey nesting sites have helped osprey populations recover from their brush with extinction from DDT in the 1940-70s (see *Ospreys: a Sad Past, A Bright Future*). Such platforms are usually sighted away from tall trees to prevent Great Horned Owls and Eagles from sneaking up and attacking the ospreys.

After almost going extinct in the Northeast, osprey are making a comeback, building their bulky nests across New York State from tidal rivers and salt water bays around Long Island Sound to the freshwater lakes and streams of the Adirondacks and Lake Champlain. Ospreys are slowly repopulating the shallower parts of the Finger Lakes, wherever suitable natural nesting sites, osprey platforms, and utility poles are available. On Cayuga Lake, the osprey population is booming.

A platform with an active nest is on Treman Marina land past the dog park and plans are being made to construct more in Stewart and Cass Parks. Recent reports following ospreys fishing in Beebe Lake found two new osprey nests attempting to be built on light poles on two separate Cornell athletic fields. In Lansing osprey are nesting on platforms built on Portland Point and Salt Point with an osprey eyeing a new platform erected in March on Myers Hill near the Mayer's Park entrance. Continuing up the west side of the lake there are at well established "semi-colony" of at least nine nests in the vicinity of Union Springs and Cayuga where there is a shallow shelf and at least seven more at Mud Lock along Routes 5 & 20 at the shallow north end of the lake, all nesting on osprey platforms and utility poles. There are probably other osprey nests in the area, [so let us know](#) when you see one!

Look and Listen for Ospreys at Salt Point:

From spring into fall, whenever near open water, listen for the Osprey's chirping as they fly overhead with their distinctive bent wings and heavy wing beats. The first place to look for ospreys is around the nest platform at the western tip of Salt Point. Also scan for perched adults or juveniles in the tops trees, utility poles, and snags in the open along the shore of Salt Point and across Salmon Creek in Myer's Park. The spit off of Myer's Park is their favored bathing spot.



Like all adult female osprey, Ophelia, the female nesting at Salt Point is a homebody and her behavior is dictated by changing hormonal levels during her breeding cycle. In general, if she is not in her nest or perching on the platform, chances are she is sitting on a large cottonwood limb nearby guarding the nest. Once she has laid her first egg, Ophelia will spend the rest of the breeding season on the nest, except for short periods when Orpheus shares in incubation, and uses chirping [calls](#) to tell her mate she and the chicks are hungry. As the chicks grow they join their mother in crying for fish (listen to [juvenile begging calls](#)), getting louder over the summer as they grow to adult size.

The male osprey, Orpheus, is harder to track as he spends more time away from the nest and on the wing. If the male osprey is not perched on the platform guarding it, scan the nearby snags and cottonwoods for his dark outline. The male must fish throughout the day and can be seen searching for fish with his head looking down as he flies over the lake or Salmon Creek. They also circle high in the sky over the shallower areas of the lake, and if prey is sighted, will hover briefly before plunge diving, feet first, to capture the fish. When fishing Salmon Creek, Orpheus will also sit on a snag scanning the water and suddenly dive and grab its target—a technique the young fledglings will also utilize when they are first learning to fish.

On windy days, when the lake water is rough, Orpheus tends to fish in Salmon Creek and in the calmer, shelter bays on the north side of Salt Point, around the marina, and Ladoga Point, depending on the wind direction. However, if after a storm the creek is strong or muddy, he will fish elsewhere. Once he has a family and as the season progresses, Orpheus has to keep increasing his daily catch. By August, the chicks are growing so fast, Orpheus has all he can do to keep up with the demand and fishes far and wide, sometimes travelling as far north as Lansing Station to accomplish this.



Watch Osprey Cams—Ospreys Up Close and Personal:

Here is just a small sample of the many high-quality osprey cams available in the US and around the world.

Montana [Hellgate](#) and [Dunrovin Ranch](#)

[Alabama](#)

[Chesapeake Bay](#)

[Maine](#)

Help us put an osprey cam up at Salt Point! Join the Friends of Salt Point's Cam committee to make this wish come true. For information, [please write](#).

Osprey Classification:

Phylum: *Chordata*

Sub-phylum: *Vertebrata*

Class: *Aves*

Order: *Accipitriformes*

Family: *Pandionidae*

Genus: *Pandion*

Species: *haliaetus*

North American Osprey, *Pandion haliaetus*

Description:

Body length:

53-65cm, females are about 20% larger than the males.

Weight:

Males: 1.2-1.6kg

Females: 1.7-2.1kg

Wing length:

Males: 47-49.5cm

Females: 49-51.5cm

Wingspan:

5 to 6 ft (1.5 to 1.8 m)

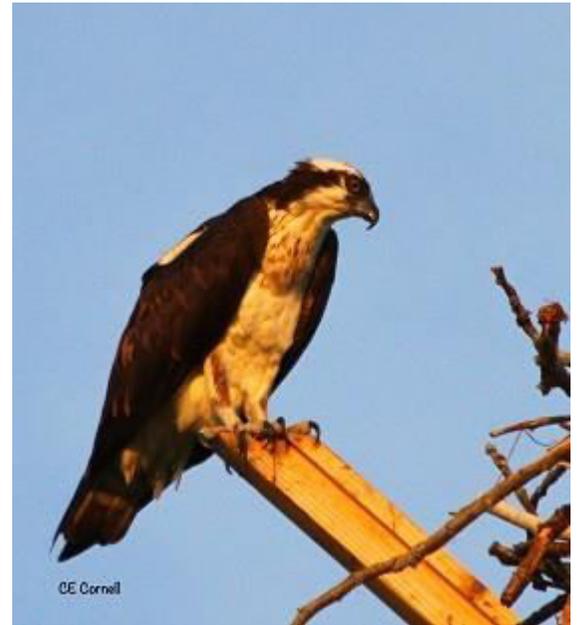
Bill length:

Males: 28.5-32mm

Females: 31-35.5mm

The osprey is a large bird of prey about the size of a small eagle. The crown and upper nape are white, streaked with dark brown. The crown also bears a crest, which is not erectile but rides in the wind as the bird flies. The dorsal aspect of the bird's body is chocolate colored from the lower portion of nape, through the mantle, back, wings and rump, down to the tip of the tail. In contrast, the chin, throat, breast, belly, flanks, shins, undertail coverts, lesser underwing coverts and vent feathers are primarily white with sparse mottling, which is more pronounced in females than the males; males tend to be whiter on the underside than females.

A distinctive dark brown stripe runs from the lores, through the eye and back towards the lower nape to join the rest of the brown on the dorsal side. This stripe separates the throat from the nape. There is a ridge of dark feathers over the eye, which is believed to reduce the glare of sunlight while hunting over sunlit waters.



In juvenile ospreys, the brown body feathers have lighter margins, thereby giving them a scaly look, which makes them easier to distinguish from the adults. The iris of a juvenile osprey ranges in color from red to orange, which changes to bright yellow on reaching maturity, usually by the age of 3 years.

The osprey's nostrils are long and slitted, and may be capable of closing during dives. The cere and nostril area is dull blue-grey and so are the feet, while the hooked bill and sharp talons are black. The bills and talons grow continuously to compensate for the wear and tear during hunting. The footpad and the pads under the toes are covered with sharp spiny scales, which help the osprey grasp the slippery fish. Moreover, the outer reversible toe (the fourth digit) rotates posteriorly to give the bird a better grip of its prey, while its long legs and tarsi increase its underwater reach by up to 3 feet.

The preen gland, at the dorsum of the base of the tail, secretes a pungent oily substance, which keeps the feathers from being soaked in water during diving. The odor of this secretion lasts in the plumage of laboratory specimens, even after decades of storage. As the bird preens itself, it picks up the secretion from the preen gland and spreads it all over its feathers, with its beak, to make them waterproof. However, prolonged exposure to water, as in heavy rains, soaks up their feathers, rendering them unable to fly.

Unlike many migratory birds, ospreys don't molt all of their feathers together, they rather molt a few feathers at a time, thereby remaining capable of flight, and thus hunting, all of the year. The molting process stops prior to migration, and in males during the breeding season, since during that period, they have to hunt for their mates as well as their young which demands greater than normal flight efficiency.

The flight coloration of osprey is unique among raptors. The ventral aspect of both the remiges (wing feathers) and the rectrices (tail feathers) is dirty white, cross-banded with brown. The outer five primaries are either black in color, or tipped with black. The primary underwing coverts are dark brown; the secondary underwing coverts are white, tipped or streaked with black, while the lesser underwing coverts (except the wrist area), the belly, flanks, vent and the undertail coverts are all white. The underwing coverts in the wrist area are jet-black, producing distinctive, rectangular, black wrist patches.

Another important feature expressed during flight is the noticeable bent at elbows, producing a diagnostic M-shaped wing silhouette, in contrast to the +shaped wing silhouette characteristic to eagles; moreover, an osprey's wings are also narrower than those of eagles and hawks.

Ospreys usually soar with wings slightly bent, wingtips pointing downwards and back, and wrists held above the body level. However, ospreys are the only raptors, which can hover over a fixed point during flight.

Sexual Dimorphism:

Male and female ospreys can be distinguished from each other both in terms of size as well as coloration. Unlike the male osprey's mostly pure-white under parts, the female's breast is streaked and mottled with brown, the streaks often taking the form of a mottled necklace. The dark streaks on the crown are also more pronounced and denser in the female than the male.

Moreover, the female osprey is also larger and heavier than the male, which is a confusing phenomenon, since it is the male, not the female, who does most of the hunting and defending the territory from intruders. One possible explanation might be that the female during breeding season eats more and flies less, since her mate feeds her; therefore she has more time and protein to grow larger.

Geographic Range & Distribution:

Ospreys are cosmopolitan, they are common along the shores and banks of bodies of water in all the biogeographical regions (namely Nearctic, Palearctic, Neotropical, Ethiopian, Oriental and Australasian) except the Antarctic region. Ospreys are found in a wide variety of biomes such as tropical rainforest, temperate rainforest, deciduous forest, coniferous forest, mixed-wood forests, mangrove forests, salt marshes, freshwater swamps, freshwater lakes, estuaries, and lagoons etc.

Diet:

Ospreys are not very choosy when it comes to their diet. They will feed on any fish, which falls within the optimal range of size and weight they can carry, that is 150-300 gms (Poole 1989); although the weight of prey may vary from 50-1200 gms (Cramp & Simmons, 1980; Prevost, 1982). However, the prey must be within their striking range of 3-feet from the surface.

Their preferred targets are either slow moving, bottom feeding fishes such as suckers, bullheads, catfish, carp, fallfish, flounder, perch etc., which dwell shallow waters; or surface feeders like herring and menhaden, which form large schools thus offering easy pickings to the osprey.

What is on the menu also depends on which fish are available during a particular season, since in a specific area, during a particular season, some fish are more plentiful than the others are. Ospreys take full advantage of such seasonal bounties, which come in the form of fishes such as herring, pollock and smelt, which come to shallow coastal waters to spawn. Inland ospreys however, have more rigid menus all year round.

In the Finger Lakes region, their diet consists mainly of brown bullhead, rock bass, small and large mouth bass, trout, pumpkinseed, blue gill, white sucker, carp and yellow perch.

Besides fishes, ospreys are also recorded to prey on other animals such as small birds, turtles, frogs, rodents, crustaceans and mollusks like conchs, and in one recorded instance, also a small alligator; however, such prey items comprise 0-1% of the bird's diet.

Hunting and feeding:

Ospreys search for food either by scanning the water surface from a perch, relying on their sharp eyesight to locate potential prey; or on the wing, soaring over water, looking for food.

Wintering ospreys prefer to hunt from a perch than on the wing, since they have only themselves to feed. When not hunting or feeding, ospreys spend their time perched on a branch over water, droop winged, preening and fluffing their feathers and shaking to dry to them prior to the next hunt.

When hunting on the wing, the osprey begins its search for food by soaring over water at an altitude between 50-100 feet. When it spots a potential prey, it stops and hovers over the spot, tail spread and wings fanning rapidly as it judges the depth and positions itself precisely for the plunge.

Most dives are made from the altitude of 65-100 feet at an angle ranging from 45 degrees to nearly vertical. When an osprey finally prepares for a dive, it folds back its wings and free falls, it then positions its feet right under the head so that it can precisely aim at the prey with its outstretched talons. It may launch a preliminary dive to make certain the prey is within the range and of the right size, even at this point it may abort the dive, if the prey turns out to be undesirable or far from its effective range of 3 feet or less underwater. When it plunges in, a hunting osprey disappears completely under the water and it may take several seconds for the bird to reappear on the surface. If the dive is successful (which certainly is in about 40% of the cases) and a fish is caught, the bird rests on the surface of the water, briefly while securing its catch. It then slowly lifts itself above water using deep almost horizontal strokes of wings. After being airborne it rearranges its prey so that the head points forward and one foot of the bird is ahead of the other, this reduces the air resistance and speeds up

the return flight. On its way back, the bird flies low over water to avoid any heavy gusts of wind and it also shakes off excess water in midair.

This hover-plunge technique is the standard hunting practice of ospreys. However, some observers have also reported seeing ospreys swooping down to skim the water and snatching prey from the surface, just like fishing eagles (*Haliaeetus sp.*) do. This technique is more effective for smaller prey, species such as sardines, shad, etc. which swim to the surface in large schools. Besides the hover-plunge and swoop & snatch techniques, some other seldom-practiced hunting techniques have also been observed.

When the osprey returns to its perch to feed on its catch, it first waits for the prey to die and then uses its strong tough beak to tear off chunks of flesh, usually starting from the head. When feeding, they usually tear off small chunks but sometimes they may swallow large pieces of flesh with skin, scales and even bones. They regurgitate indigestible matter in the form of pellets, similar to those of an owl, but mostly their food passes normally through the gut, thanks to their specialized intestine.

Migrations:

There are two distinct populations of osprey with respect to lifestyle, the Residents and the Migrants. Residents breed in the subtropical latitudes in winter; they either stay in the same area all year round or move only locally during the non-breeding season. The Migrants nest in the temperate latitudes and fly off each autumn to spend the winter in the tropical regions.

North American ospreys start migrating south to their wintering grounds in Central America and South America around mid-August. By the end of September, most nesting colonies in the northern latitudes are empty. The numbers of migrating ospreys observed at selected watch points along their southward route are at their greatest during mid-September and early October.

They reach their wintering grounds by late November. During winter, the only thing an osprey does is to eat, rest, recover from the stress of the previous breeding season and prepare for the next breeding season. It has been observed that during winter, they become more tolerant of each other as they congregate in loose flocks and are even known to hunt together in small groups, a few birds hovering over water, looking for fish might also stimulate others to join in the frenzy.

Adult ospreys start leaving their wintering grounds in early spring and by late March, most ospreys have left the wintering areas for their natal nesting grounds. Yearling ospreys stay on their wintering grounds for another eighteen months, returning to their natal nesting grounds at the age of about two and a half years.

Two-year-old ospreys however, leave the wintering grounds much later than the adults, and may reach their natal nesting grounds as late as June, which is too late to breed. However, pre-adult ospreys may become a nuisance to the breeders, because they try to take over nest sites and may interfere with the breeding pairs, as they explore and search for nesting sites of their own. They are also sometimes known to replace a partner in a breeding pair if it dies or is incapable of performing its duties.

Vocalizations:

Besides the courtship call of the male, the osprey vocalizations have been classified into three main types.

- 1) Guard calls comprise a slow series of whistles and are emitted when an intruder (usually another osprey) or potential threat approaches too close for comfort. These calls are meant to indicate that the bird is aware of the threat and will attack if it persists.
- 2) Alarm calls range from a series of whistles to high pitched squeals and are emitted when a threat becomes obvious and inevitable. This also alerts other birds in the colony, which may join in the chorus too, resulting in a frenzy of loud calls, which eventually drives off the enemy.
- 3) Begging calls are emitted by the females as they beg to their mates to feed them, since during the breeding season, they spend most of their time at the nest, incubating the eggs and caring for the young. Begging calls of nestlings are similar to those of the females'.

When an osprey nest is approached, aside from uttering guard calls and alarm calls, they will also respond by making a threatening posture with erect stance, neck extended, back feathers erected and wings partially opened and beating slowly. The guarding bird will chase off any airborne intruders, while those approaching from the ground are dived at and struck with talons.

Predators and Enemies:

Ospreys have few natural enemies. Mostly the eggs and the young are victims of predation, but sometimes, even adults especially incubating females are snatched from their nests by owls, under the cover of darkness. Great Horned Owls and Bald Eagles are the main avian threats to osprey chicks.

Although adult ospreys fiercely defend their nests, a determined raccoon, fox, snake, skunk, or a similar land based predator might raid the nest to steal eggs or chicks, if it is within its reach.

Ospreys tend to avoid these perils by building their nests on isolated spots such as islands, secluded trees, or on top of man-made structures such as nesting platforms, electricity poles and other, similar, hard to reach spots.

Competitors:

Worldwide fishing eagles are the osprey's main competitors for the ecological niche of an aerial, diurnal, fish-eating raptor. Different fish eagles compete with ospreys in different parts of the world. In Asia, the white-tailed eagle (*Haliaeetus albicilla*), white-necked eagle (*H. leucoryphus*), and the Steller's sea eagle (*H. pelagicus*) are its competitors; while in Africa, it faces competition from African fish eagle (*H. vocifer*). In the New World, their main competition comes from the bald eagle (*Haliaeetus leucocephalus*).

Bald eagles commonly rob ospreys of their catch—klepto-parasitism—often in midair. Eagles will sometimes drive ospreys away from good foraging and nesting areas, kill their young, or kill the adults, especially if the osprey will not relinquish a fish. Sometimes smaller birds such as gulls or ravens also try to pirate osprey kills, but are less likely to succeed.

Adapted from *Ospreys*, courtesy of the University of Toronto.