

## *Pandion haliaetus* (Osprey or Fish Hawk)

Family: Accipitridae (Hawks, Kites and Eagles)

Order: Falconiformes (Diurnal Birds of Prey)

Class: Aves (Birds)



**Fig. 1.** Osprey, *Pandion haliaetus*.

[<http://nathistoc.bio.uci.edu/birds/falconiformes/Pandion%20haliaetus/Pandion%20haliaetus.htm>, downloaded 2 November 2014]

**TRAITS.** The osprey, also known as the fish hawk, is relatively large in size when compared to other birds of prey (raptors). Their wingspans range from 145-170cm and they are between 55-58cm long. They display some degree of sexual dimorphism (morphological differences between sexes) where the females weigh 20% more than the males and have a 5-10% greater wingspan. Their wings and backs are dark brown while their abdomen, breast and neck are white. This white colour also extends to the underarms, however, under the wings are dark in colour. When flying, their wings bend to form an “M” shape. They tend to have a spotted brown necklace in the lower neck region which is more prominent in females. Also, in females, the plumage is

often darker in colour. These birds also possess a conspicuous dark horizontal band across the eye region between the white crown and neck giving a masked appearance (Fig. 1). They have bright yellow eyes and black hooked bills. Their legs are pale grey, almost white with rough feet due to tiny spines or spicules and a reversible toe enhancing its gripping ability as well as long, curved, sharp claws. Additionally, there are nasal valves within the nostrils which helps prevent water from entering. Chicks share similar characteristics with adults but have less prominent necklaces and a spotted appearance (Kirschbaum & Watkins, 2000).

**ECOLOGY.** Ospreys feed almost entirely on fish, they are found near bodies of water with abundant fish supply. These may include but are not limited to; swamps, lakes, ponds, salt and freshwater and rivers (Kirschbaum & Watkins, 2000). They have worldwide distribution, populating every continent apart from Antarctic. In Trinidad and Tobago, some are found throughout the year while others migrate from North America and spend October to around August in the country before returning to the North to breed. There has not been any evidence to show successful breeding in Trinidad and Tobago, however, there have been sightings of these birds' attempt to construct nests (Sookdeo, 2014). Typically, they build their nests in the open in close proximity (3- 5km) to bodies of water in high structures such as tall trees; often with bare branches (Fig. 2), as well as unnatural structures such as buildings, communication towers and utility poles (Kirschbaum & Watkins, 2000).

**SOCIAL ORGANIZATION.** Ospreys are solitary (Birdlife, 2013); hunting and migrating alone even though they are monogamous (one life partner). During the breeding period, males choose the nesting site and often return to it first. Males hunt and provide food for their partners and offspring. Eggs do not hatch simultaneously, thus the offspring develop at different rates. The larger offspring exert dominance on its siblings and when food is scarce the dominant bird is more likely to survive (National Geographic, 2014). When juveniles learn to hunt for themselves they no longer rely on their parents and they leave the nest.

**ACTIVITY.** They are diurnal (Birdlife, 2013) which means that they are more active during the day. Therefore, they hunt during this time. Fish tend to be more active during the day as well so there is an advantage to hunting during the day. Furthermore, they are visual hunters and so are better able to survey their surroundings. Their ability to spot their prey under the water is enhanced in the daylight as fish are more difficult to see under the cover of darkness. When they are not hunting they spend a lot of time perched in on branches and other tall structures in or around their nest. Most ospreys are migratory and rely on air currents referred to as thermals. These air currents rise up in the atmosphere due to heat of the day and so it would benefit the osprey to be active during the day to ride these currents (New Jersey Audubon, 2014).

**FORAGING BEHAVIOUR.** Ospreys hunt by flying over the water surface or less frequently from a perch. They flap and glide from about 10-40m above until they spot a fish. They hover over the prey, waiting for the opportune moment and then dive swiftly into the water. They bend their wings bent back and thrust their legs forward at the last moment, diving feet first into the water. Their rotating toes and spicules (small spikes) on the pads of their feet aid in controlling their grip on the fish. They beat their wings rapidly to emerge out of the water with their prey (Marshall, 2009). They are successful on 24-74% of their dives. Success rates are dependent on natural individual ability, the weather and tide (Kirschbaum & Watkins, 2000). Once in the air,

they utilize their precise grip to rearrange the fish orienting it to face forward by carrying it with one leg in front the other (Fig. 3) (Marshall, 2009). It is suggested that this makes the fish easier to transport as it improves the aerodynamics. The size of the fish usually ranges from 10-30cm in length. They perch near the vicinity of the nest to consume their catch. Usually, they eat from the head first, proceeding to the remainder of the body. If a relatively large fish is caught, they tend to carry the fish around snacking on it throughout the day. Feeding rate depends on how far from the nest the osprey travels for food, as such, the further they travel from the nest the more energetically costly it is and so it has to feed more in order to compensate for this cost. Since they prefer to feed on live fish, they tend not to store food. Very rarely, they may feed on snakes, birds and small mammals (Kirschbaum & Watkins, 2000).

**COMMUNICATION.** Not much is known about communication in ospreys. However, it was found that ospreys utilize vocalization to communicate. These include courtship, begging, alarm and defence calls. Furthermore, they tend to be directly coupled with some form of visual display typically flight and posture. For example; alarm calls are often sounded when a predator is in close proximity to the nest is usually associated with an erect posture and diving. In addition, females have been found to tip forward during mating to signal that they are receptive to the courting male (Kirschbaum & Watkins).

**SEXUAL BEHAVIOUR.** During courtship, the male performs an aerial dance as well as provides a food offering near the nest site. From high above the males tend to carry out sharp dives down to the vicinity of the nest carrying fish and giving a screaming call. The pair can circle high in the sky together with interlocked talons. Although, both males and females gather the materials to build the nest which is largely composed of sticks and twigs, the male does most of it and it is the female that does the arranging. In the first year, the nests are relatively small but get progressively larger in size as the pair tends to return to the same nest yearly, adding more materials to the structure (Marshall, 2009).

Copulation takes place after the nest is built and occurs frequently. The male mounts the female flapping its wings rapidly to maintain balance (Fig. 4). It is suggested that females lean their bodies forward to signal her reception to the male, however, males tend to mount females without any signalling. If copulation is successful, the male continues to provide food for the female and eventually to the offspring as well as protection from predators and rival males (Widen & Richardson, 2000). Typically 3 eggs are produced and are cream in colour with dark red-brown spots. The female ospreys remain in and around the nest until the young fledge (feathers and muscles develop for flight) and are able to hunt on their own (Marshall, 2009).

**JUVENILE BEHAVIOUR.** When the offspring hatch, their eyes are open but their movement is limited. After about two weeks old they are capable of walking around the nest. Offspring reach 70-80% of their adult size after about a month and are more active, frequently exercising their wings. Eventually their wing flapping ability improves and they are able to hover just above the nest. They fledge after about 53 days. The juveniles remain close to the nest for at least two weeks returning to it to obtain food from their parents. This is done until their flying and hunting skills improve and they no longer need to rely on their parents (Marshall, 2009).

**ANTIPREDATOR BEHAVIOUR.** Since these are large raptors and great predators in their own right, only the larger raptors such as some owls and eagles are main threats; preying on juveniles and less often on adults. It is suggested that the spotted appearance of the juveniles may aid in reducing predation by camouflaging them in the nests. More importantly, kleptoparasitism where for example; the larger bald eagle steals the osprey's catch (often during a struggle in mid air) occurs more frequently than direct predation (Fig. 5). Nests built over water have been shown to suffer attacks from crocodiles. Ospreys have been known to aggressively defend their nests (especially during early nesting period) but not so much their surrounding territory. This may be due to the energy cost put into building these nests which are often reused by the pair for a period of time (Marshall, 2009).

## REFERENCES

- BirdLife International (2013). *Pandion haliaetus*. The IUCN Red List of Threatened Species. Version 2014.3. <[www.iucnredlist.org](http://www.iucnredlist.org)>. Downloaded on 18 November 2014.
- Kirschbaum, K. & Watkins, P. (2000). *Pandion haliaetus* (On-line), Animal Diversity Web. (Accessed November 15, 2014). [http://animaldiversity.ummz.umich.edu/accounts/Pandion\\_haliaetus/](http://animaldiversity.ummz.umich.edu/accounts/Pandion_haliaetus/)
- Marshall, J. (2009). Ospreys: Fish Predator Secrets Revealed. (Accessed 17, 2014). <http://www.grit.com/departments/ospreys-fish-predator-secrets-revealed.aspx?PageId=1#axzz3JHNaEqgI>
- National Geographic (2014). Osprey. (Accessed November 17) <http://animals.nationalgeographic.com/animals/birds/osprey/>
- New Jersey Audubon (2014). What is Migration? (Accessed November 18) <http://www.njaudubon.org/sectionoases/whatismigration.aspx#Noc>
- Sookdeo, K. (2014). The Osprey A Fisherman on Wings. Trinidad and Tobago Newday, June 12, 2014, (Accessed November 15) <http://www.newday.co.tt/features/0,196159.html>
- Widen, P. & Richardson, M. (2000). Copulation Behaviour in the Osprey in Relation to Breeding Density. *The Condor* 102: 349-354 (Accessed November 18, 2014.) <http://www.jstor.org/stable/1369647>

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**Fig. 2.** Osprey's nest in tree.

[[http://eol.org/data\\_objects/15998064](http://eol.org/data_objects/15998064), downloaded 18 October, 2014]



**Fig. 3.** Osprey catching fish prey.

[<http://www.desiostudios.com/tags/osprey>, downloaded 18 November 2014]



**Fig. 4.** Pair of ospreys mating.

[<https://www.flickr.com/photos/nsxbirder/13477885284/>, downloaded 18 November 2014]



**Fig. 5.** Osprey with fish being chased by a bald eagle.

[<http://www.glogster.com/mkderouin/osprey-project/g-6kn9np61ovbgmgeh1m02a0>, downloaded 18 November 2014]