

# ABOUT OSPREYS: A STUDY OF 50

part one.....

## THE OSPREY IN NATURE



The thick, strong tarsi and sharp half-round talons

cept the Antarctic. Adaptations for plunging include an absence of an orbital ridge over the eye, and soft slitted nostrils that close under water. Their long legs and thick, bluish, heavily scaled tarsi are designed for the impact of the plunge, and their roughly studded, prickly feet, which have a moveable toe to improve grip, end in large, needle-sharp half-round talons perfectly designed to pierce and grasp fish.

Catching a fish from the air is a difficult task. In order to spot one, osprey vision is very acute, with a resolving power of the retina about 3-4 times that of man. Like all hawks they have two foveae, one for monocular vision and one for binocular vision, with cones so heavily concentrated that their visual acuity is about eight times that of man.

The hardest part of the hunt is judging the refraction of the water, estimating the depth and the speed of the prey, and descending suddenly from air into this totally different medium to target the fish in seconds. Even the most experienced adults miss their strikes between 10% to 60% of the time depending on the species of fish, the clarity of water, the weather—high wind and rain make hunting very difficult—and other factors. This co-ordination takes practice and experience.

A large fish is preferred, usually 150 to 300g taken fairly close to the surface. Maximal catch would probably be 400g, as it represents about 1/3 of a male's weight, and above that it would be too heavy to carry.

Lacking flight practice, muscle, experience and judgement, fledglings are generally poor foragers.

### The Hunter

Hawks of the air, of great sky-spaces, soaring hunters of fish. The osprey's life is defined by large amounts of time in flight and by the fish he must catch several times daily. Their extremely long wings are made for over-water hovering and long periods of slow flapping which allows sharp-eyed coverage of shallow part of water below for an opportunity at a target. They are superb in the air, spending as much as a third of their day on the wing, but ungainly and ill at ease on the ground.

Their spectacular foot-first plunges into sea or lake are admired everywhere in the world where ospreys are familiar—which is every continent ex-



Specialized hook for ripping off tough bits of fish. Note adult's pale yellow eyes and lack of "spots" on plumage

### *The Prey and the Eating of it*

After rising from the water—as deep a plunge as a metre—the osprey adjusts his flapping catch and flies heavily up to the nest or to a high, favourite roost to eat. Unlike wide-jawed “gulpers” like loons, herons and kingfishers who swallow their fish whole, ospreys are “grazers” with narrow jaws and a long, slender hook on the upper beak, and consuming a fish takes a long time—one small, deliberate bite after another, looking around the world between bites to be sure their meal is safe from pirates.

They always start at the toughest, least delectable part (one would think) the mouth of the fish, working hard with twisting, wrenching motions to rip off bits of strong bony parts of snout, cheek and gill covers, standing on top of the fish if it is particularly big, or holding it near the tail with their talons if it requires pegging down. Their very large crop accommodates up to 300g of fish, but if the catch is particularly bulky, the osprey may either give the rest to his mate or simply lug it about, never leaving it unguarded. Ospreys sometimes even eat away at it in the darkness of the night.

### *Fish diet imposes limitation of energy*

Thus the hunt and the ingestion of the prize, repeated several times a day, take a large period of their energy-budget. Because fish-flesh generally has less calories and is digested more rapidly than meat, more weight of fish is needed each day to stay healthy and do the other things of life; to soar, preen, build and maintain those huge nests, and for the male to bring fish to court the female, to feed her while she incubates, and to nurture her hungry young.

Unlike most raptors, the male alone may have to continue catching fish for all his family even after the young are flying well; though some females help provide about 60% of the fish eaten (by fledged young in Virginia) studies of other populations show they rarely hunt for their fledglings.

### *The nest*

This is the other great defining aspect of osprey life, and the place adults and juveniles alike spend much of their non-flying time. Their giant eyries, which are added to year after year, are the key to their courting and breeding successes. Adult ospreys lead long lives and very seldom divorce; a change in partners is usually due to death of one.



*an osprey's nest with brooding female (photographer unknown)*

Good nests may be in short supply.

The male's main courting-card is his nest, which, carefully maintained over the years—pairs make up to one hundred trips a day carrying material—may exceed a ton in weight. This seems an incongruous mass for its two or three smallish eggs, but the high, exposed waterside nests must often withstand gale-force winds, and insubstantial nests of beginners may blow down.

Nests are always out in the open on the top of something to make it easy for these long-winged hawks to come and go without risking damage to their flight-feathers. As well, ospreys clearly don't mind having their home in full view, as opposed to many other raptors that conceal their nests and whose plumage is inconspicuous while brooding.

Female ospreys will fight fiercely to defend a nest; we had one found in June on a small island (no people, no wires, no shot found) with a severe distal wing injury that caused the death of the wing. Four ospreys had been seen circling the little island before this one was discovered and it is fairly sure that two at least had a nasty fight over the nest-site.

When the nest structure is satisfactory, the female stays at the nest nearly all the time; while brooding and raising her chicks, she does not hunt even for herself unless she is desperate.

### *Chicks and juveniles*

Meantime, the male is working hard to catch all the fish for the entire family. He lugs each still-living prize back to the nest where the female tears it up, little bite after little bite, and offers each tidbit to the nearest hungry mouth. Fish dumped into the nest are often twisting and struggling, and so the nestlings learn to recognize fish unrelated to water early. ***The sight of a still-flipping fish on the ground before them is the trigger to feeding.***

After about a month, nestlings begin to practice flying and making their early experimental dives into the water, and between these flights they come back to the nest to be with family, to rest and to feed. On initial flights they sometimes have difficulty steering or landing; we were once called out for an “injured” youngster that had been clinging for several hours to a cottager’s uninviting shoreline of rocks held up by a sort of chicken-wire basket device (gabion). The newly-fledged osprey found a sudden group of us just too much, and cheeping in fear, it released itself awkwardly and flew off. We followed it down the lake and presently found it high in a tree with its parent.

Most of these beautiful, white-spotted, orange-eyed juveniles need a full ten days to three weeks or more of parental backup for strikes missed during practice.

### *Migration*

Like loons and nearly all fish-eaters, they migrate, and like loons, adults leave first. Southward migration starts as early as mid-August, and the further north on the continent they are, the earlier they begin to leave. The early departure is not due to how the cold affects the *osprey*, but how the cold affects the *fish*; they go deeper or further out and are consequently not available to striking feet.

Though some juveniles stay around their nests a week or two after their parents depart, most juveniles leave when their parents do. Once in the south, the juveniles stay until their third year when they are ready to breed, which is why we don’t see second-year ospreys here in their breeding areas.

Juveniles that delay their migration have no further back-up when they miss strikes, but at least they had their natural learning period with their parents. In trouble is a youngster that has missed the tutorial period between fledging and independence; it will be facing his hazardous migratory journey without no hunting skills at all. What hope is there then?

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*part two.....*

## ***THE OSPREY IN HAND***

### *Capturing, holding, transporting*

Most injured ospreys are found near water, and some are found in it. They never walk far from the site of the accident. They can be scooped up with rubber fish-nets (the coarse, thick netting prevents tails and flight-feathers from becoming entangled) and on land, all they need is a towel over the head to reduce their terror and to be grasped from behind, the hands sliding down the back and gripping the parts of the legs closest to the belly. We have never seen any sign of aggression or even self-defence; only stark terror. Mind you, like any bird, fingers moving too quickly near the face may be nipped, but their bite is not damaging.

Like most of our birds, we prefer that they be transported in dark cardboard cartons; the darkness reduces some of their agitation, and the softness of the cardboard helps protect the needle-sharp talon-tips. If these are blunted, there is no way to sharpen them, no way that they could possibly improve in captivity where they are forced to be on their feet all the time. And no way to return them to the wild without their ultra-sharp dinner-catchers. That would be irresponsible.

### *Arrival at the clinic*

#### *For the most effective care, the relevant osprey points are these:*

- They don't keep well, and need much more thought-out preparation than such hardy land-land-based species as Red-tails and Great Horneds
- Their terror demands space and privacy and a lot of time and distance from humans.
- Ospreys are very nervous in captivity, grunting and whinnying and backing up fearfully fully, crushing their long primaries and tail-tips
- Osprey feet are designed for fish-piercing and fish-grasping, *not walking* nor gripping a perch for long periods. The great half-round talons blunt easily, so talon-tip wear is a great danger
- Their vision may be even more important in catching prey than that of land-hunting raptors. Can they fish with the use of only one eye?
- Fisheaters starve more quickly than meat-eaters
- The sight of a still-flipping fish nearby *on the floor*, not in water, is the trigger to feeding
- Because the osprey has to grip the fish while tearing little bits off, fish less than 5" are too small to hold
- Ospreys are bite-at-a-time grazers that feed slowly and need to feed often—they certainly cannot be force-fed whole fish (the narrow beak and jaw makes force-feeding even single slivery bites an awful job—never try it!)
- Ospreys get all the fluid they need from the fresh fish they eat

#### *Add to that...*

- Osprey plumage is different from that of other raptors; it has a pungent smell from the chemicals in the uropygial oil and is particularly stiff and surprisingly inflexible, causing the flight-feathers to break very easily
- They usually behave as if dazed and do not move much
- Fledglings denied their weeks of hunting practice before migration time will probably starve quickly after release, so euthanasia of injured or nest-deprived should be seriously considered

#### *our admission procedure*

As soon as the osprey arrives we do a quick checkover, take an X-ray and a weight, and for the record, a wing-chord. Then if euthanasia has not been promptly required, we hurry to present the osprey with spacious privacy and that precious

first fish. In our experience with these beautiful, gentle eagles, nothing matters more than starting that slow grazing intake of nutrients and fish-fluid, and this takes distance, patience, understanding of their behaviour in the wild, and the right sort of fish, preferably alive, as its movement on the ground nearby is the trigger to eating in captivity, just as it was in the nest.



*Primary damage on the first day despite carefulness*

### *The physical exam*

If the osprey is able to stand, I slide her (“her” because we have had almost twice as many proven females as males) out of the travelling box onto a carpet runner, and for a few minutes just watch her reactions, her balance, the symmetry of her wings. Usually their injuries are major and easily recognized.

After a bit I scoop her up in the cradle-position in the crook of my arm, look closely for blood in the nostrils or the mouth, note her eyes, and if she can tolerate it (no signs of respiratory difficulty from internal haemorrhage) I turn her on her back on a towel on the exam/X-ray table, cover her head lightly with a small cover, and look for splats of blood sometimes jettied out by a shot onto the white plumage lining the wings or on the body. I also look and feel over the wings, the keel and crop and examine the condition of the feet and talons. The commonest problems we see in ospreys are starvation and fractures from shot and collision from (apparently) hitting overhead wires. If she does not need euthanasia at this point, we continue.

### *X-raying*

The X-ray then defines any skeletal injuries, and as she is already on the table, it is easy to slip a labelled cassette under her without disturbance. We take the X-ray the same way we do all birds except loons—on their backs, no anaesthetic, no taping, no hands, just that little cover over their heads, and after slowly releasing the legs we tiptoe away, take the radiograph and tiptoe back to hold the legs again. It always

works. (Loons squat on their bellies instead.)

Generally, we’re looking for fractures, dislocations or shot. Given their method of eating fish, swallowing a sinker would be extremely unlikely (they even carefully pick out and discard the swim-bladder) but we do sometimes find shot in various soft tissues. More than half our ospreys have fractures, nearly all in the wings.

Note: juveniles have large joint spacing—there are even some joint spaces in flying ones—which can be misinterpreted as joint dislocations by those unfamiliar. The “spaces” are areas of the bone-ends that have not yet become ossified and so do not show on X-ray.



**An X-ray of an osprey showing how long the radius-ulnas are. Note also the thick coracoids**

### *The indoor unit*

From the cassette the osprey, still quiet on her back, is gently lifted to the nearby scale, where the weight too is taken while still lying trancelike with only that face-cover. That and the wing-chord are all accomplished before setting her gently in the largest indoor area we can offer, which for us is 8' long, under full skylight behind

one-way viewing doors. As soon as the osprey recognizes a fish and starts to eat, she can go to an outside aviary. As you will see, beginning the natural self-feeding is tricky, but in our view, anything is better than using force.

All the emphasis on quietness, low voices, soft-soled shoes, slow movements, and good preparation to speed the procedure may seem excessive to some, but it is essential to reduce terror which in turn rapidly uses up precious remaining calories. Like Sharpshins, ospreys have a very thin line between living and collapsing. Because starvation is often involved, calories expended now at a time of high stress may result in an inevitable slide to death. Have not all rehabilitators experienced the newly “rescued” admission who then dies?

To protect their talons, their entire floor is covered with astroturf everywhere they have to take a few steps. Other rug-like materials must not be made with looped or knotted threads that snag the sharp tips. Three of our admissions had already blunted their talons somewhat, just from being grounded for a few days. *They cannot be sharpened.*

They do not move about much, but like most birds, they do prefer to be off the ground. To accomplish this, we have found that a choice of a few thick, low barked branches and perhaps a firewood half-log (both also covered with astroturf) fastened to sturdy bases works well. They are often too weak to climb up far, but staying at ground-level means wear on tail and flight-feathers. Another idea is a perch made of a styrofoam water “play-log”—those long coloured cylinders sold everywhere for summer water-fun—firmly nailed to a broad non-tip base and covered with astroturf. These are protective of the talons, yet afford a good grip.

### *Re bandaging, casting, taping, etc.*

Their wings are huge—extremely long radius-ulnas give them that curious hunch-shouldered look. The ‘shoulders’ are actually the carpals (wrists). Like most birds, but especially those with such long heavy wings, any restrictions such as bandaging not only prevents preening and interferes with thermo-regulation (those wings are like big blankets) but puts them seriously off balance. Because they are so inactive in captivity, restrictions are seldom needed, and minimal supports (small thermoplastic cast for a metacarp, for example, or pinch of Scotch tape to keep primary tips from dragging) that interfere least with them have worked well, even outdoors.

### *Measurements:*

**Weights** should always be recorded on admission along with noting the state of the crop. This is common-sense baseline data.

**Proven males**, 11 full-sized. Very even; their admission weights ranged from 1135g thin to 1300g in good flesh, though later given unlimited access to easy fish two gained to about 1700g.

**Proven females**, 22 full sized. The starved ones were from 950g – 1175g, while the healthy ones were from 1300g-1870g. The females were usually somewhat heavier but the range was not much different, and some of the fledgling females may still have had some growing to do. I wonder why we have had so many more proven females than males?

**Wing-chords.** This measurement is taken on a closed wing from the carpal to the tip of the longest primary, with the primaries keeping their natural curve above the ruler and the carpals just touching the stop at the beginning of the ruler. (In countries where the wing is flattened onto the ruler, it is no longer called a “chord” and the measurement is longer.) I have not yet enough data to be useful. Females are usually longer-winged than males, but not always and again there is a big overlap. Females measured 410mm to 500mm; males 452mm to 485mm.

The wing measurement is not needed for age or gender, as age is obvious. In captivity for injury, gender does not seem to matter except again for the record, or for banding; but it should be taken early before the primary tips start to break off, which they will. Though there is an overlap, males are usually smaller than females and often whiter-breasted, but plumages vary. Our proven (ovaries examined) females admissions were 23, outnumbering proven males who were only 14; the remaining measurable ones were evenly divided by guess. I have not yet seen a brood-patch or a cloacal protruberance.

But while it is satisfying to know the gender, it is not necessary for care. Just give the bird all the fish it can eat!

**Humeral Lengths.** Just for curiosity, I took humeral measurements from X-rays on all the full-sized



juvenile in Robin's hands. Note spots, orange eyes, white "spots" and those long wings

ospreys lying relaxed on their backs, so that the humerus is actually *on* the cassette. This is a measurement that might better indicate body proportion (there it is again, the pleasure of measuring!) Not surprisingly, the small number of males all had shorter humeri, measuring 142mm-143mm long, while the majority of females were well above 145mm, mostly above 150mm and one even up to 168mm long. As so often happens, there was just one that spoiled the "female is bigger than the male" picture, a female whose humerus measured only 137mm. She couldn't be ignored, as she was definitely an adult in the beginning of July with a large ovary and fallopian tube as well.

So even these exact measurements show a great variation in gender size. To confuse the issue still further, the humeral lengths often were not reflected proportionately in the wing-chords. The short-humerus female had a medium-large wing-chord—480mm—while another female who had nearly the longest humerus, also had the shortest wing-chord. For now, I give up.

### Aging

It is much more important to recognize the *age* of each osprey that comes into care. The adults have solid dark backs and wings, and pale yellow eyes. The nestlings, fledglings and juveniles in their first year have orange irises and their backs and wings are attractively pale-

spotted. Please note the *orange eyes*; this is *not* residual blood in the anterior chamber (hyphema).

The significance of recognizing the first-year birds is that most of them are still dependent on their parents for fish, and even more important, they have to be taught and to practice targeting fish with their parents and sibs. Ironically, if they are taken away from their family into care (to be saved) they will very likely die if released after the "teaching" time is over, which is shortly before the adults leave for migration.

*Our experiences with starvation, nutrition, and feeding these beautiful, nervous ospreys will be addressed in the next column*

*Kit Chubb*

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