part Two.....

FEEDING OSPREYS

ways we have found that work

This is what you want to see!

We feed them at once. We have found that the most important first step with any osprey is to get it to eat by itself as soon as possible, as fat stores are often non-existent and weight loss is rapid. Only 14% were rated "plump" indicating good fat stores on admission.

Feed first, ask questions afterwards is our motto, unless the bird has to have immediate euthanasia for a hopeless injury.

Nearly always, they need to begin with a live fish that is flapping, which focuses their attention on it, giving them a chance to recognise it in its strange environment. It has to be flipping on the *ground*, not far from the osprey's feet. A bait minnow of 5" or so will do, but not smaller, as it will be too short for them to grasp it with their big foot. There is no use offering a swimming fish in a brimming pan; though fish-in-water seems logical to man-thinking, it conveys absolutely no stimulus to the osprey—the eyes stay blank, the head droops. It often takes several tries with a live fish because of a dilemma: if you are too close, the osprey fastens his frightened eyes on you instead of the fish, until the poor fish gives up the struggle for oxygen; if you are too far, the toss is likely to be inaccurate (for me, anway). One solution is to toss it, and disappear. One-way mirrors helped keep them calm.

The trigger to feeding an osprey is a flipping fish on the ground near him

After the osprey recognizes a fish and takes a bite out of it, the food problem is basically over. From then on, the osprey accepts dead fish tossed or placed and eats them readily. Some have greeted the first fish (even occasionally, a dead one) promptly and got down to business; what a delightful sight that is! Others have taken days and caused us much anxiety.

If all our units were already occupied, we had success using a 10' long astroturf runner right on the clinic floor, with osprey at one end and the fish-tosser crouching inconspicuously at the other, ready to sneak away. On occasions when it was impossible to get a live fish *pronto*, we have even resorted to dragging the fish on a thin, weak thread or pancake-flipping it by using a long, slender stick, or even frisbee-ing it so that it arrives on the move. If the fish happens to hit the osprey's foot, the bird looks down to see what the hell is attacking him; and in that minute he may recognize it…you hope.

How much fish to give an osprey? Just make sure there always is at least one fresh one within his reach and vision, and record what he eats.

X-ray of a plump osprey with a full crop

Note about the large crop

As they swallow bite after bite, they "pack" it into place. This involves a curious snaky-neck movement which makes me think of Balinese dancers. All raptors do it sometimes, but it is particularly striking in the osprey. Like other raptors, a full crop is obvious at a distance, and on an X-ray it obliterates a large space!

Ospreys are said to make castings at times, but we have never seen any. Fish-bones dissolve very quickly and are refined to a powder through the great length of very thin intestine.

About the food value of fish

There are less calories, protein and fat in most portions of fish-flesh than in an equivalent portions of meat. Of course, fish species vary in their fat, protein and non-edible content—some are very high in oil, some very bony—and in the wild, ospreys eat a variety of whatever is catchable in their territory. In winter it is often flounder, snatched off the shallow sea floor; other fish recorded include herring, perch, sunfish, smelt and occasional trout.

But whatever the fish, it is clear that these fish-eaters have to eat a lot to keep up their weight and health, and double that to store up fat!

Species of fish we have offered

The weights of ospreys vs Red-tailed Hawks are reasonably similar, except that male Red-tails can be even smaller than male ospreys. Of course the bone/fat/flesh ratio of the food offerings varied, but we have found that Redtails, moderately active and fed mice, needed only about 100g-200g per day, whereas ospreys, doing basically nothing, when fed mainly sunfish, needed 500-700g, and one ate up to 800g of whitefish in 24 hours.

I should add that as "inlanders," we have very little control over what fresh or even frozen whole fish we get. Whole, not de-gutted. Some ospreys did well on large fresh bait-shop suckers and live sunfish, others had frozen perch, whitefish, crappie, sunfish, rock bass, even alewife, and a few got fat on occasional batches of small dead trout given to us by a fish-farm. I've seen them climb up on top of a really big fish to eat.

Big, fresh, whole and juicy is best. Whatever the fish, the eating of those small bites is slow, measured, and lengthy, on and off all day long, so care has to be taken not to keep him from his fish; whenever distracted or alarmed, he just stops eating. Approach or even stare, he backs away, frightened. Now abandoned, the longer the fish lies there, the drier it gets.

One summer I tried to keep some sunfish in a large aquarium for such emergencies, in theory a great idea, but the job of changing the water, the risk of fish jumping out or other birds falling in, and worse, the fear of the aquarium springing a leak into the electrical furnace ducts was just too much for the occasional one or two ospreys we get a year. We now try to have on hand at least a few fish frozen in water, which prevents them from drying out in the freezer. But sadly, most of the post-fledged ospreys we get have to have euthanasia.

Fat and the set point

To many people in this age of corpulence, "fat" means "bad". But the natural storage of fat in wild mammals, much of it under the very stretchy skin that causes the body shape to change as it accumulates, is vital to their health and is programmed to be burned in place of food during lean times, such as hibernation or failed hunts. Nowadays for many of us there *are* no lean times. The key to fat loss and gain is each body's metabolism which acts like a bank book: consistently increased caloric intake above that body's daily needs creates a deposit of fat (a credit) and the weight (balance) goes up: consistently decreased below that body's daily needs creates a debit, and the balance goes down. History and culture illustrate the effects of known increased calorie intake—think of the Japanese sumo wrestlers—or decreased calorie intake—think of concentration camps. Among today's well-fed masses, think of anorexia.

In birds, when food is plentiful, as much as possible is stored as fat for failed hunts, winter, long migratory flights and emergencies; the burned fat produces both energy *and water*. Samll winter passerines gain about 10% in fat during a day and use it up keeping warm overnight. Our foster-parent owls go for up to two weeks at a time during the winter eating nothing, drinking nothing; fat mice, rats, even birds, are of no interest to them. When I arrive with my basket of goodies each day in the fall and late spring, they arrive immediately to snatch them even straight from my hand. But in winter, they merely blink at me from their favourite high perch, turn away, and don't bother to move. They are using up their fat stores. A certain level of stored fat that tells the body when to stop eating is referred to as a "set point."

About recovery from starvation

70% of our starved ospreys died either just before or just after admission. Compare that to our starved Redtails--only 14%

When the fat stores are used up and there is no food coming in, the body starts to burn muscle to provide critical energy for the brain, retina and adrenal medulla. As the pectoral muscle is the largest in the bird body, it is important to look and feel the muscle on the sternum for thickness and symmetry, using the keel as a sort of dipstick to gauge the health of the bird, the degree of starvation if any, and the amount of time elapsed since injury. In mammals, recovery from starvation or severe illness has to be done with fluids and small easily-digested amounts of food, or it will be rejected by the stomach. In birds, particularly in raptors, large quantities of food are eagerly eaten. (I am speaking of those that have not passed the point of no return, for at a critical point in starvation there are neither enzymes nor thiamine left to metabolize glucose for the brain. An informative court case in *Newton's Madness*, by Dr. H. Klawans, Harper 1991, pg 185, illustrates this.)

We use mice either chopped or offered with forceps if help is needed, or simply presented in a heap, letting them choose what they know they can handle, and often it is an amazing amount—a Red-tail gobbled fourteen mice at one go; of starved Great Horned Owls, a 950g-female ate 400g, a 890g male ate a whole rat on the second day. A man fed one a squirrel that hugely tented her stomach, a Snowy ingested three 150-200g rats in a day, and so on. All survived and most were released.

Remember that while a whole prey animal is *food*, unsuitable for a starved mammal, it is also a container of *fluid* with minerals and vitamins, and so fills both needs at the same time. Those unfortunate emaciated raptors that have reached that point of no return inevitably deteriorate after the second day, but that happens with tube-fed or fluid-fed ones as well; we did

tube one or two without success.

Though starvation is usually after, not before, an accident, juvenile ospreys often starve because of hunting inexperience. Only one of our fourteen starved ospreys was an adult, crippled by a bad fractured tarsus. Nine were September-October flying juveniles, three being injured before starving. The six remaining juveniles starved without primary injury, again suggesting the difficulties of learning their hunting craft.

Would fluid tube-feeding have helped? It seems unlikely. The eight that died did so within the first day or two, after ingesting some food on their own. Post-mortems showed critical deterioration.

Starting them off: some examples of what happened

- Five with brain damage (and therefore possible/probable vision problem in one eye at least) seemed to have trouble recognizing a fish at first. Two, however, were dying; three were later released

- Two from other centres were unable to feed or be fed there by other means, yet with us they both recognized fish-flopping-on-the-floor at once and ate

- One who was offered both a dead perch and a live sunfish, promptly took the dead perch!

- chicks fallen from nests usually had to have a fish handed directly to them, as probably their parent would, before they would take it. They had no fear of us

- Some ospreys accepted living fish, ate at once, yet died. They proved to be either too starved or to have signs of organ failure—pericardial effusion, ascites

- Others were so starved and weak that though they grabbed a fish they couldn't tear it open, so we offered cut-up bits with forceps, which they readily accepted, as they were too weak to care about us. When they were stronger they fed on a cut-open fish

- One, wild and flying almost at once, was just too restless and panicky to find fish. On the third day we banded and released him, unfed

- One adult put into an aviary immediately had trouble locating (or we had trouble flinging) fish-missles. Yet on the second day this osprey started hooking fish out of the pool where we were keeping them! That was a great surprise. Normally we kept live fish in our indoor pool because the smell/sound of the fish in outdoor pools might attract roving raccoons, who would not hesitate to kill a weakened bird

The osprey in an outdoor aviary

After one or more days indoors to get them started eating, we would put them out in the largest, least-treed aviaries. Starting outdoors made the presentation, understanding and acceptance of that critical first fish much more difficult. Here they usually hop-flapped onto a low, pre-arranged branch or big log while those less able usually managed to climb up an astroturfed ramp to a perch offering both bare and astroturfed sections for their choice. Other stumps and low branches of different sizes, heights and types were always available. The grooves of coarsely barked logs offered a more varied surface, allowing changes of pressure in parts of the footpads and talons. Always choices!

Walls

When panicking, (which was anytime they saw us!) chain-link fence proved to be bad, whether white or green vinyl-coated, as they crashed and clung, with their precious flight-feathers and tails straining through. Solid materials were better, but like some raptors, ospreys misinterpreted white walls as distant space, but no matter what the surface, they tended to crash repeatedly if alarmed. They are designed for wide, high spaces for flight and seemingly cannot adjust. Even knowing they are being watched (or photographed) is disturbing to them, causing them to break off eating and look about anxiously, thinking of flight. When they really fly it takes an effort and they need a lot of clear distance. We soon found that we had to go to extraordinary lengths not to spook them, even using a blind at the door through which to take pictures.

Feeding them outside was whole new problem for them (and for us) for with all the expanded strange ground, they had to learn to recognize a dead fish all over again. To cut out the confusing patterns of plants and leaves on the ground, we spread large areas of plain light-coloured astroturf on which we discreetly tossed fish until finally they recognized one. Despite their amazing vision, these dinners were so greatly displaced from the natural that they seemed unrecognizable at first. Also, about 8% of our ospreys had brain-damage with visual problems, which probably made things even worse.

But finally, often after many patient attempts from blinds on our part, they accepted the new strange routine and got on with the business of eating, resting and healing.

Crash on chain-link--bad for feet, flight-feathers and feeding

They don't last long before their flight-feathers break and their talons blunt; I have seen primary tips start breaking off the first day. Once we overwintered an osprey, and here our winters mean snow and ice. Yes, we found a way to offer fish in water (just enough to keep them from freezing) in a shallow pan heated on electrical heating coil, but the damage to the poor osprey was really awful. Never again will we attempt to keep one longer than a few weeks.

It is likely that any type of ground summer or winter, earth or snow, will wear down talons, as they are meant to spend a third of their normal day in the air. As for their stiff flight-feathers, damage there seems inevitable too.

Pools

Every bird needs access to a bathable pool of some sort, and each of our aviaries has a hand-made unpainted concrete one. Except on a one occasion when an osprey had an enthusiastic

bath in pouring rain, and another surprising one where the osprey hooked some live fish out of the water, these pools were ignored by ospreys. Just as well, as we've found since how damaging concrete is to tender soles in loons and grebes. Ideally a natural pool would be best, but there are now better artificial surfaces than ours.

One of the nicer case histories

Adult, July. A fisherman lifted her out of the water the previous night. She had been shot; as her bruising was green, it had occurred about four days previously. One had shattered the midshaft of one of the coracoids, while another lodged in the tissues of the shoulder, and a third had made a wound near her elbow. All the entry-holes were from below, low in the abdomen—she may have been perched.

For three days she stayed in a 7' long unit, viewed through one-way mirrors. The privacy gave her the opportunity to recognize a fish and start eating right away. Then out to an aviary.

My notes:

Day 1—ate 260g; Day 2— 396g. In the 24 hours from Day 3 to Day 4, she ate 800g of whitefish, nibbling in the night as well. In aviary, she spent her time on logs and an upturned stump, eating peacefully, resting, and starting to exercise her wings. Banded and released back at site on Day 21—lovely long, steady flight across the lake as our little group cheered and hugged each other.

She was a lucky one. The other six shot ospreys did not make it.

Kit Chubb

next column: their injuries, and post-mortem findings

This is one of the aviaries that worked reasonably well for ospreys. The juvenile finds his fish on the astroturf and eats them on the log. Photo from a blind