

Common Loons: Some Surprising Results from Hook-swallowing

we have found evidence of both migration of fishing gear and survival after hooking

Not surprisingly, loons that have swallowed a fish with fish-hook are often mortally wounded by internal rupture caused by the snagging in the esophagus or proventriculus and the violent jerking when the trailing line catches on an underwater obstacle, or when hooked on a line that has a fisherman on the other end of it. People have reported loons struggling, apparently tethered to a spot, though they often broke free under the terror of being approached. Perhaps the fish itself might have been already tethered by a broken line when the loon grabbed it. (How fishermen hate to admit that their lines break!)

What is surprising is the number of our cases that showed on post-mortem – and occasionally on X-rays too—that they had survived such a rupturing for long periods, perhaps years, and that their torn esophagus or punctured gizzard had repaired itself perfectly. So far, I have found 19. Imagine a human stomach rupturing, spilling dinner into the abdomen and then healing itself without any intervention! Bird metabolism is so rapid that healing is probably complete in a few days. (see # 6084, # 6797)

Rupture evidence has included curious knots of adhesions on the outside of the esophagus or gizzard (adhesions occur when damaged internal tissues heal and stick together unnaturally). Ruptures cause contents to fall out into the airsac that surrounds that part of the gastro-intestinal (g-i) tract. The evidence of these gastric spills are the strange things I keep finding in the neighbouring airsacs *outside* the g-i tract, things that had been originally swallowed. Pieces of fishing gear, pebbles, scales, fishbone bits, organic lumps. **There is no other way for such debris to arrive in an airsac.** Even if any bit were ever inhaled, it would soon be jammed in the tiny bronchioles inside the lungs.

Amazingly, I have never found infection. Instead, each foreign bit, even one of the hooks, had been ‘doctored’ and neutralized by the body by being neatly wrapped in fine, pale tissue either adhered to the outside of the g-i tract or suspended, swinging gently in airspace by little strings of tissue, like a spider packages a fly.

Though these loons had survived for some time following the rupturing (the organic matter was often well decomposed and odourless) many were doomed because of the incapacitation and pain following such a violent and sickening event, with the frequent development of such secondary deteriorating illnesses as pneumonia and aspergillosis, both accompanied by waterproofing loss. Despite such a clean aquatic life away from the fungal spores produced on the land, loons are very prone to aspergillosis: we have found 16, or 13% of our loon admissions (this excludes hatchlings and small chicks in their first down, too young to develop the disease).

To make survival even less likely, five of those hook-ripped were lead-poisoned, two had their bodies entangled in line, and four had been shot as well, though carrying shot was likely unrelated.

Here are a few of those hook-rupture histories.

4501, adult male, June. *Floating listlessly in-shore, severe dyspnea, dying. Euthanasia. Post-mortem showed tissue-encased debris and pebbles scattered widely through abdominal airsacs as well as a thick, blackened broken hook-tip*



4501 XRay of hook in abscess in lung



**#4501 necrotic abscess
containing hook-tip**

encysted in a caseous ball near one lung (photo). Yet no rupture was found. The interior was foul, with airsacs so thick with aspergillosis that some were like pita-bread pockets filled with green mould. To top it off, this loon had been shot too; a pellet remained in the flesh of a wing.

2587, adult female, August. *Fishline trailing from mouth, jaw destruction horrible from rubbing of long line. Thin, severe respiratory distress, probably terminal. Euthanasia. Post-mortem revealed a small double hook that had torn through the upper esophagus and*

embedded near the bronchi, causing adhesions; one airsac was partly filled with yellowish matter. There were crayfish legs in the gizzard, suggesting searching out such easy-catch creatures near shore. The X-ray also showed a shot near the elbow.

4592, adult male, July. *When Husband Robin and I were having one of our rare three-day vacations at Presqu'île Provincial Park (sometimes giving a lecture in return for a campsite) one of the rangers told us of an adult loon that had recently died on shore. The body had been decapitated and skinned for the Park. Luckily, the torso was still in the freezer, so I asked for it and took it back to the clinic. No weight could be taken, but the body was emaciated.*

The X-ray was clear and upright, showing a large number of pebbles in the gizzard and a lot of small ones scattered throughout the opposite side of the abdomen; there was no metal (but then again there was no head or neck either). A large amount of thin, dry caseation surrounded the trachea and the right side of the esophagus following a rupture which had spilled the pebbles. Some were rolling freely in airsacs, others had already been "sewn" into tissue and were hard to find. Dorsally between the testes (which are located near the spine just below the lungs) there was a large blood-clot, probably from the ripping out of the hook.

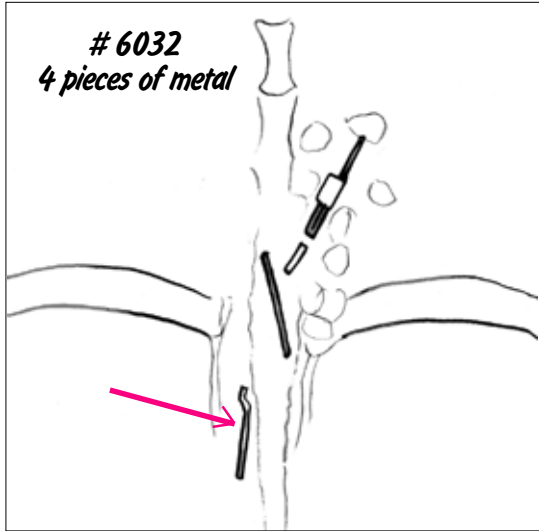
The poor loon had finally died of massive secondary aspergillosis, thick, cream-coloured, flourishing, with one airsac that could be entirely lifted out like pita-bread.

What are these straight lengths of metal?

In many loons with fishing-gear, we have found straight lengths of metal—as many as four in one bird—in various parts of the abdomen. One would probably be the hook's shank, but where there were more it was puzzling, even to a few fishermen who have examined the pieces. Some were stainless, evidently broken clips (quite common) while many others were rusted. A fishing guide once identified some rusty ones as "parts of a bottom crawler for pike". The only sure thing was that they came with the fish, as in the following cases.

5042 adult male, August. *Very weak, bleeding from the mouth, old cuts in mouth from trailing line, respiratory distress. Thin. Euthanasia. In the gizzard there was half a brass clip attached to a swivel with sinkers and a leader 25mm long. Some blackened pebbles and an old, greenish hook were found in airsacs along with a long length of metal.*

4161, 4409 both adult males. *In these two lead-poisoned cases, lengths of rusting metal had penetrated the gizzard completely; it may be that the strong contractions were powerful enough to have forced these slender shafts through the deep thickness of the entire gizzard muscle. As I have found fish-spines thrust through the gizzard wall, it suggests that the gizzard may often be pricked and punctured and that the loon's body deals with these routinely.*



6032
4 pieces of metal

tracing of XRay at right



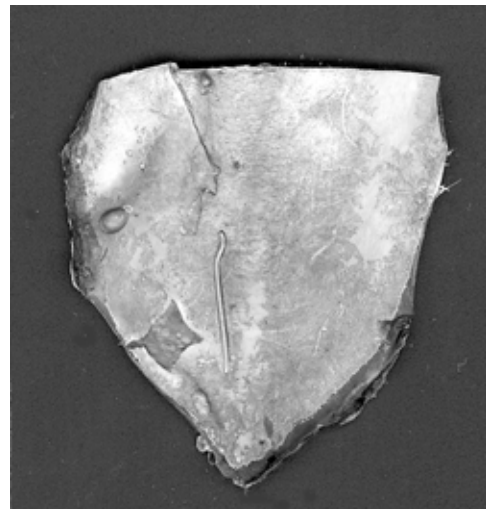
6032 waterlogged Xray with 4 metal shafts. Arrow to the one in the sternum

The mystery of # 6032, August: what caused this?

This adult female was seen with two other loons, thrashing and bleeding, and died before she was lifted into the boat. She had bled to death, for all her plumage was blood-soaked—head neck, breast, belly, even wings. On X-ray the upper airsacs were opaque with fluid. She was very thin. Thorough examination and skinning revealed no external wound, cut or puncture, so she had haemorrhaged internally out the mouth.

On post-mortem, her whole body had bloody water in it. Unless one knew what a liver should look like, it was unrecognizable—a brownish-green lump with a rough surface. There were several pebbles in her gizzard, as well as a length of rusty metal that might have been a hook shank, and half of a very long steel snap; also remains of small crayfish, with the one in the esophagus being whole and still green, yet untouched by gastric acid. It did not seem that she had been lead-poisoned, as the inside of the gizzard was clean, yellowish and pliable. However, she had been ill before she was found exsanguinating (thin, old liver damage, crayfish).

Her X-ray showed more lengths of metal I couldn't find despite a long, frustrating search so I finally removed the liver and intestines and re-X-rayed them beside body, and thus found the other half snap, embedded in the caudal end of the sternum! It looked as if it was glued to the underside of the bone, but it was actually tightly sandwiched under a very thin layer of tough transparent tissue. (Fig a,b,c)



metal embedded in underside of sternal tip

Though some foreign bodies such as hook ends, quills and needles are known to “travel” through bodies, this looked as if it had arrived there by force: it suggested a collision that had punctured the gizzard and javellined the swallowed steel hard into the sternal bone. But I’m just guessing.

SURVIVORS OF THE HOOK

#5391 juvenile, mid-August. *Captured without much argument; long line with two lead sinkers on it trailing from mouth. Finders, who were observant lake residents, cut the line short and brought the loon. X-ray showed a 25mm long, fresh hook in gizzard (its shaft sliver-barbs were undamaged). Waterproofing fine. Quite lively, but also tired and overheated—had been wrapped in towel, weather 25° C and slightly humid; feet very hot. Blood for ALA-d lead assay later proved normal. Banded and released back at site at once by finders; to be watched. The hook would probably rust out.*

#5412, juvenile, end of August. *Same lake. Probably the sibling of # 5391, as both had been observed by loon-watching acquaintances that summer. Found in distress with thin green line wrapped tightly around beak, lead sinker and leader hanging outside. Our friends caught the loon with difficulty, partly because of aggressive attendance of a parent, even though juvenile was almost full sized.*

X-ray showed a large hook deep in esophagus, as well as a shot in the neck. We tugged out a ball of line from inside the throat, cut the dangling mess off and snipped the internal line short; there was a raw lesion on lower jaw from rubbing. Eyes still round, still good spirit. However, there was a worrisome loss of waterproofing on the upper breast. Blood for lead assay later showed a subclinical lead level not considered toxic by the lab. After banding, the finders again hurried to return the juvenile to its family.

#5412 or #5391: BAND SIGHTING REPORT

One day a month later, our friends reported watching one of the adults catching crayfish, tossing them across water to one of these big juveniles, who would dive to retrieve it; this repeated at least six times. The other juvenile had disappeared, so one had survived with a hook left in, and one had died (though it might have been killed by aspergillosis, another shot, or a fresh hooking).

SURVIVAL IN THE WILD: AN OBSERVER'S REPORT

Another loon that survived a hook and line was a female on her nest who one day began to toss her head about in a distressed way; loops of line sticking out of her beak could be seen with binoculars. Of course nothing could be done. However she finished hatching her eggs, somehow managed to swallow the line and behaved like a healthy parent again, back-riding her chicks and so on. Probably the hook disintegrated.

In 14 cases, with recognizable fishing gear also present, I have found dark, hard, tightly curled tangles of some sort of line. Because in some cases there was a lot of it it suggests that it is monofilament rendered harmless by the g-i acid and crushing.

4046, adult male, July. *This was a "land-lander" indicated by his scraped, bleeding toes abraded by a rough landing on the tarmac of lakeside parking-lot. He was a very strong, healthy loon whose X-ray revealed half a clip in his gizzard and further down, certainly out of the gizzard, there was a 30mm long linear piece of metal, possibly a hook shank. Whatever he had swallowed, his waterproofing was perfect and he was in fighting-fit condition, agitated, striking so powerfully that in our clinic, he broke three vanes of an air-vent with one blow. Despite our inevitable bruises he was refreshing, after so many moribund loons. We managed to band him and slip him back into the lake at once.*

How long ago had he swallowed the gear and had a rupture or puncture?

AT LAST! LIVING EVIDENCE OF A HEAL

#6084, adult, May. *Struggling in middle of lake, bobble visible on beak. Unable to dive; captured with net and brought quickly at 5 pm. Bleeding profusely from the mouth, gasping, rasping, spraying blood trails whenever he shook his head to try to clear his trachea; finders had so much blood flung across their legs that it had run down into their shoes. Hyperventilating. After being calmed under a towel for a few minutes managed to X-ray, snip the six inches of protruding line off, then slid him into cold pool. Waterproofing was perfect; this hooking was very fresh.*

The X-ray revealed a large hook mid-thorax with leader and line visible, and higher in neck there was a clip and swivel. Unpleasantly, we also saw a shot near the clavicle, with another lower and a third in the lower pelvis. Who knows how long they had been there! Calmed, respirations improved but loon

continued to spray lines of fresh blood around pool walls until about 9 pm. Rested on mats near pool-room door all night, occasionally flinging out old, dark brown blood in smaller amounts.

Day 2. On mat, dozing at times, in water now and then, on netting later in the day. (At one end of the pool there is a polypropylene net "bridge" on which loons like to rest; it allows air to their undersides and they can push off easily right into the pool.) Respirations much better but occasional wet raspy sounds. No spray but a few bright spots of blood.

Day 3. still some bright drops of blood. I added a dozen large minnows to the pool, and he struck my hand very hard (good sign!) Later made a few passes at the fish, killing four but not swallowing any, but in the evening ate them all—about 130g (a mere snack for a Common Loon; we have known loons here to eat as much as 1200g in a day!)

Day 4. Only two or three spots of blood today. Eyes not fully round. On netting most of time. Snapped at new minnows but again did not eat until evening, another 130g.

Day 5. A few drops of blood under netting during 24 hours; about 260g minnows, along with six much bigger suckers. Managing about 330g a day now. The amount of fish he was eating was far too little to sustain him normally, but he ate what his painful throat could bear.

Day 6. No bleeding!

Day 8. Respirations look normal until handled for banding and final X-ray when the loon seemed rather weak, with eyes still not round. But wear patches starting on soles, so dare not keep longer. On the other hand, waterproofing is still good. Banded and released back into his lake. In the last X-ray, clip and swivel now in gizzard and the hook is upside-down with barb facing the opposite direction.

Thoughts about # 6084. When comparing his two X-rays, both taken simply resting on the cassette with his head where he pleased, the neck shot is easily seen on the first, but completely blanked out by natural overlying tissue 'whiteout' of head-over-neck-over body on the second. This may be the case with other loons whose X-rays reveal shot when closely checked using a frame to reduce the surrounding brightness. I made up different-sized frames of cardboard and it is amazing how much more can be seen when the light is focused only through certain smaller areas at a time.

He was never weighed nor measured, because it would have been added stress which might have aggravated the haemorrhage. After admission, we did not touch him again until banding him for release. Like most loons, he was quite tolerant of me emptying and filling the pool, cleaning up blood, adding fish, and so on; I made it clear I was minding my own business and that my activities had nothing to do with his person. In turn, he rested quietly, watching.

Could not this healthy loon have survived those eight days resting in the wild without the intervention, especially if he had had a good store of fat? All we did was provide him with snacks—while also adding the stress of captivity and depriving him of sunshine, family, real water, and choices.

With the same thought in mind, we know of several cases where loons were captured, the trailing line cut short while in the boat, and the loon released at once. Though we have no proof, #6084 suggests that if they were healthy to start with, those never removed from their own world had a very good chance of recovering in their natural environment.

SUMMARY OF OUR HOOKED LOONS

With the evidence presented in above cases, perhaps the best answer is not to try to "Do Something" (heroic) but to quickly release the loon and have observers report. Even unbanded, lake cottagers know their loon pairs and monitor them throughout the summer with great interest.

Our treatment for those hooked applies to nearly all loons: either quick euthanasia for the terminally distressed, or if the loon is still strong, we quickly band and release it back in its own lake, where its chances of healing simply *have* to be better than in cramped, indoor, artificial stresses of captivity.

Each dead body is an opportunity to learn more. As each care-giver does a post-mortem, they need to look carefully for objects in, and also transplanted from, the gut. Note that 45% of those with gastric spills had no sign of a hook, which must have simply crumbled and been evacuated. There is so much unknown.

Kit Chubb