

NOTES ON A NEW YORK NEST OF THE BALD EAGLE

THOMAS J. RAUBER

The history of the Bald Eagle (*Haliaeetus leucocephalus*) in New York State, as in most other parts of North America, has been one of steady decline, accelerated since the 1940's by this species' vulnerability to the effects of DDT and certain other pesticides and chemical pollutants. In recent years there has been, to my knowledge, only one nesting pair in the state. I have observed this pair for the past 11 years, during which period they have succeeded only once, in 1973, in raising a young bird. This paper summarizes my observations, and I think contributes something to the natural history of the species, as well as having historical interest.



Bald Eagles on nest.

Photo by T. J. Rauber

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This pair of eagles and the general location of their eyries are by now known to a considerable number of individuals. Nevertheless, because it is essential that as few people as possible visit the site during the period when the eagles are nesting, I will say merely that the location is at a medium-sized lake in western New York. In the past

few years, with the welcome increase in interest in endangered wildlife, the nesting area has been posted against trespass during the nesting season. Efforts will be made to protect these eagles further by, for example, putting "raccoon shields" on their nesting trees.

I have taken about 40 photographs, two of them reproduced herewith, and I have cooperated with the New York State Department of Environmental Conservation and the U.S. Office of Endangered Species in having the area posted during the nesting season and in other ways.

Observations began in the spring of 1965, but for the first four years I did not keep detailed records. From 1969 to the present all observations have been recorded. Almost 900 visits have been made through the years—during all hours from 4 a.m. to 9 p.m.

Arriving at the eastern edge of the swamp, it was possible to watch from first light until dark—having the eagles in view most of the time—for weeks before the spring foliage appeared. With the use of a 32X spotting scope, excellent observations could be made at a distance that would not disturb the eagles. I also used 7 X 50 binoculars.

Two different blinds were built for filming purposes. A 35 mm still camera with an 800 mm telephoto lens and a 16 mm battery-operated movie camera with a zoom lens were used. Both cameras were mounted on tripods.

On the few occasions when I climbed to the nests after the season was over, I used lineman climbers, belt and safety strap. Occasionally a twelve-foot boat, powered by a six-horse outboard, a pack basket and hip boots were necessary to approach the site.

The Site—This is an uninhabited lake eight miles long and one-half to three-quarters of a mile wide. It lies in a north-south valley, with slopes rising sharply from the water's edge. It is 1,120 feet from the surface of the lake to the highest elevation. Drainage is to the north, and the water is used for domestic supplies. At the southern end of the lake and beyond for one mile lies a swamp one-quarter mile wide, harboring carp, pickerel, perch, white suckers, muskrats, raccoons, pheasants and many other living creatures, depending on the season of the year. This swamp is an open area of swamp grass and cattails.

During the years of observation, the eagles have chosen to build their three nests on the western slope, which affords them better protection from the more severe weather coming from the northwest. Temperatures vary from -10° F in winter to 105° F in summer.

The western slope is covered with a mature forest of oak, beech, hickory, white pine and hemlock; there is some new growth as well.

The floor of the forest is fairly open but there are trees that have fallen from age and windfall. The canopy of the forest is closed. No lumbering is allowed in this area, so that it remains in a natural undisturbed state. The slope to the east differs only in that it has more open area and some farmland.

Activities by humans on the western slope are limited because of inaccessibility. Fishing is allowed on this lake, but restrictions on the size of boats and motors have to be observed. Hunting is permitted on the slopes in the autumn but by that time the eagles range over a wide area.

Although relatively wild, the area is much less so than, for example, large areas of New York state, notably the Adirondacks, and it is remarkable that the only pair of eagles to persist in the state is here. With the gradual moderation of the effects of pesticides, let us hope that other nesting pairs of our national bird will soon be found in the state. Only a few miles from the present nest there are fields of potatoes, beans and other crops intensively sprayed by air; much of this residue finds its way into the lake. When a concentrated infestation of pine spittlebug occurred in pine plantations farther up the lake shore in spring, 1955, 1,950 acres of pines were sprayed from the air on the slopes of this and a smaller neighboring lake then and in the two succeeding years. The spray used contained DDT, xylene and some inert material in fuel oil suspension. Two or three addled eggs of this pair sent for analysis were heavily contaminated (see Appendix). Nevertheless, as noted, the pair did bring off a young in 1973 and let us hope that things are improving.

I consider this pair of eagles to be essentially resident. Other lakes a few miles away are doubtless visited by the eagles at least when not nesting. The winter in this area is severe, but temperature is of no concern to this species as long as food is available. In recent years concentrations of up to 20 or more eagles have occurred around reservoirs, dams, and deer carcasses, in the wild area near Port Jervis, roughly 170 miles away. It is possible that this pair of eagles wander to such feeding areas before becoming conspicuous around their eyrie in February.

During the warmer months of the year the eagles feed on carp and other fish caught in the shallows at the south end of the lake and along the marshy inlet, and, no doubt, on occasional mammals and birds. In the winter they take the latter, and also carrion, especially deer carcasses.

When I began observations in 1965, the birds were fully mature and hence at least 4 or 5 years old. This would mean that they are now at least 15 or 16 years old. We still do not know what the average life span of the species is in the wild, but birds of prey of this size have lived to twice that age in captivity. We do know that in the wild there may be substitutions if one of a pair dies or disappears.

Observations—The following is a year-by-year summary of some of the more interesting points. I have made some direct quotations from my edited notes.

According to a local resident who operated a set line on the lake years ago, there was a large nest on the west side of the lake close to the shore during the years of World War II. He never observed any young birds.

1965-1968—As noted above, detailed notes are not available for these years. The eagles attempted to nest each year but never fledged young.

During these four years and continuing until the nest tree fell following Hurricane Agnes in June, 1972, the eagles used "Eyre 1" which was 75 feet up in a live hickory about 180 yards up the slope.

The only other observation I will mention for these early years is: May 3, 1969—Found a dead Osprey (*Pandion haliaetus*) at the edge of the swamp almost directly beneath the eagles' eyrie. Its carcass was analyzed by the Fish and Wildlife Service and while dieldrin and other chemicals were detected, they were not in sufficient amounts to cause death, even though the bird was somewhat emaciated (see Appendix). The Osprey had a broken neck, however, and I believe it may have been felled by one of the eagles when it happened to fly too close to their eyrie. During the nesting season, the eagles were hostile to any Osprey that appeared nearby, and I have seen both eagles leave their perches to pursue Ospreys. They ignored other birds, including crows, which sometimes harassed them.

1970—This year, as in 1969, the eagles repaired and added to the nest, but I am not sure if eggs were laid. At any rate there was little or no sign of incubation, although the pair were seen in the immediate vicinity until late in June.

1971—Much of the adult Bald Eagle's life centers around the eyrie. After the first of the new year there may be a break in the weather—not a cloud in the sky, the sun shining brightly which brings the temperature upward to the 50° mark. On such a day the eagles may be seen in the vicinity of their eyrie.

"January 25, Sunny—50°. Sighted both eagles, tree perched, just

north of the eyrie. In a short time they both moved a short distance to another tree and perched about 8 inches apart. After ten minutes one departed, soaring and circling ever higher, shrinking to a mere speck in the blue sky. Within twelve minutes from time of lift-off, it had returned and perched next to its mate. Having landed, it turned about on the limb, both eagles facing in the same direction, viewing the valley below."

These early sightings, witnessed also in previous years, I regard as early visits for it would be another month before they would constantly be in the close vicinity of the nest.

"February 25, Sunny-45°. This is the first sighting of an eagle at the eyrie. Its mate is in the top of a white pine 150 feet to the north. Upon their seasonal return, the eagles do not immediately go about rebuilding the nest. It will be another couple of weeks before they will diligently work at that task. They constantly bring materials to the eyrie during the entire nesting season. Many sticks are discarded or fall from the edge, and they may be examined after the nesting season, along with feathers, bones, and other debris on the ground. Food scraps are seldom found as I believe the area under the nests is visited by skunks, fox, raccoons, and opossums for the purpose of securing food.

"March 28, Cloudy-40°. On this day an eagle went to the eyrie and started to incubate. Of the roughly 34 days required to complete the process, I was able to make observations on 30 days. On several visits I was able to witness their changing—the male and female take turns at incubating. During incubation I always found one of the pair on the nest."

The most detailed observations of this process were made on April 30, 1972 as noted below. After 53 days of constant incubation, it was evident that the egg would never hatch.

I climbed to the eyrie on May 22. The eagles flew in circles, calling *kah kah kah kah* but never diving or threatening me, and after 12 minutes they disappeared. No further sound was heard from them. They did not reappear until we were leaving the area. There was only one egg, which was sent to the U.S. Patuxent Wildlife Research Center at Laurel, Md., for analysis and possible determination of the cause of its failure to hatch. It was heavily contaminated (see Appendix).

1972—"February 17, Cloudy, snow on ground-28°. Eagles very active. Female visible in eyrie.

12:08 p.m. Male moves from one limb to another just above eyrie.

12:10 p.m. Male leaves, moving to nearby tree.

- 12:12 p.m. Male goes to nest, facing one another they are very close. Much bowing to one another, both bowing at same time.
- 12:13 p.m. Male moves to a limb just over the eyrie. Its mate remains in the eyrie.
- 12:15 p.m. Male leaves the limb, flies to the south.
- 12:17 p.m. Eagle in nest also leaves, flying to the south.
- 12:22 p.m. Eagle returns to the eyrie. Twenty seconds later its mate returns to the nest, moving about.
- 12:24 p.m. Eagles copulate.
- 12:25 p.m. Eagle leaves eyrie flying 150 feet north, landing in the top of white pine. This tree is in sight of the eyrie and its mate.
- 12:36 p.m. Eagle leaves eyrie flying north—passes mate while flying north toward the lake.
- 12:42 p.m. The remaining eagle leaves the top of pine tree, and also heads north, toward the lake.
- “February 27, There is a Great Horned Owl in the eagles’ nest.
- “February 28, The owl is still visible in the eyrie. Both eagles are present in the same tree, above the nest.
- 2:30 p.m. The owl is under attack by crows. The eagles are nearby watching. They do nothing.
- “February 29, Eagles are back at the eyrie. The owl is not to be seen.”

The Great Horned Owl, as is well known, begins to nest very early in the season, even before the eagles. A pair of owls sometimes appropriates a Bald Eagle nest and they have been known to cause the eagles to move to another site. In this case, however, the owl disappeared, perhaps because the eagles stayed close by. Crows sometimes harass the eagles but are ignored. They might be a threat to eggs, but as noted, the eagles seldom or never leave the eggs exposed.

“March 25, On this day the eagles are starting to incubate. From now on there was always an incubating eagle present up to and beyond the 34 days it takes the eggs to hatch.

“April 30, Sunny—70°.

- 12:20 p.m. Eagles have just exchanged places on the nest.
- 1:13 p.m. Incubating eagle stood up, moved about, turned around facing in the opposite direction. Back down in position half a minute later.
- 2:00 p.m. Eagle stands for 10 seconds. Resettles in same position. Did not turn about.
- 2:35 p.m. Eagle stands up, moves about, turns facing in the opposite direction. Time 45 seconds.

3:07 p.m. Eagle stands up, stretches, turning around. Time two minutes. The sun is bright and warm. The eagle in incubating position. Has bill open at times.

4:18 p.m. Eagle stands stretching, whistles, rearranges sticks of the eyrie with bill. Back in position. Time 1-1/2 minutes. When whistling, the head of the eagle is straight up and back."

During these brief periods of standing and moving about I believe the egg is also turned—the eagle using its closed beak to do so. I could not actually witness this, however.

4:42 p.m. "The whistling is now more frequent. This is a means of signaling its mate that relief is desired.

4:45 p.m. Mate appears on edge of eyrie. Changing places takes one minute from the time one leaves the egg until its mate settles in place. The eagle that had been incubating goes to the edge of nest. Leaves at once."

After 43 days of constant incubating, the birds were no longer to be found in the vicinity of the eyrie. On the 79th day I climbed to the nest to investigate and possibly retrieve an egg or eggshells. As I was making my way up past the nest I noticed a hole in the nest it-



Raccoon peering from hole in eyrie.

Photo by T. J. Rauber

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self—8 inches across and quite deep. Removing a stick from the nesting material, I poked it into the hole. Much to my surprise a raccoon appeared, came out past me very close, and proceeded out onto a limb. Glancing back at the hole I saw a second raccoon appear at the entrance of the hole. It followed the first out onto the same limb.

Over the years some of the nesting materials had decomposed to a soil-like substance and small plants were sprouting. I observed when climbing to the top of the nest, which measured 7 feet across and 7-1/2 feet in depth, that the surface was flat and the outer rim made up of sticks. The inner area had been lined with finer nesting material such as cornstalks, cattails, reeds and grass. A round depression 10 inches across and 3-1/2 inches in depth and lined with fine grass showed where the egg or eggs had been incubated. There was no egg or eggshell fragments. I did find the remains of a fish, a skeleton of another fish and the tail of a red squirrel.

Starting on June 20, 1972 and continuing for the next four days and nights, Hurricane Agnes brought rain, almost without letup, totaling between 12-1/2 and 14 inches. This resulted in some of the worst flooding ever recorded in the eastern U.S. The nest tree went down on the 22nd or 23rd of June crushing the empty nest beneath it.

1973—The eagles built a new nest, which I found on March 2. They had moved seven-tenths of a mile to the south, on the same slope, and selected a living oak in excellent condition that was about 3 feet through at the butt. The nest was in a crotch 85 feet from the ground. It was already of good size—measuring about 4 feet across and 3-1/2 feet in depth. The eagles began incubating on March 21.

On the 47th day it became perfectly apparent that the eagles were raising an eaglet! Because of the heavy contamination of the 1971 egg, I was surprised and delighted.

The adults alternated at feeding the young. On May 21st it rained, very hard at times, all through the day until 3 p.m. During this rain, one adult eagle was visible at the nest protecting the young from the storm. It was in a mantled position, head held low over the eaglet. The adult was soaking wet; its white head appeared brownish. The eagle spent hours in this position. About 3:30 p.m. the sun appeared. The young bird could be seen flapping its wings, which appeared to be about 5 inches long. The adult bird, wings spread, dried off in the sun on the edge of the nest. Carcasses and unused scraps of food were removed and dropped some distance from the nest.

“July 14, Today, 11 weeks and two days since hatching I saw the young eagle on the wing for the first time. It flies and soars well.

Once on the wing, the young eagle, and its parents, spent less time in the immediate area of the nest.

"August 15, Today, four months after hatching. I had what was to be my last sighting of the young eagle."

The young eagle seemed to have a fondness for its newly acquired ability to soar and fly for it would stay aloft for long periods of time. At this point in time the adult eagles were seldom in the vicinity of the nest.

1974—After the success of 1973 I was optimistic, but it was not to be. They began incubation on or about March 2 and things seemed to proceed normally for about a month.

April 14, when the eggs would have been about due to hatch, dawned warm and muggy and by noon there was a tornado warning for the area. About 5 p.m. a heavy storm struck, with winds of up to 60 mph and torrents of rain.

The following day the eagles were not to be seen. The storm had caused them to desert; perhaps the egg or eggs had been broken as the nest tree was buffeted by the gale. On April 17 I visited the nest but could find nothing beneath it except some droppings. No scraps of food or bones were to be seen. I believe the storm was the reason for the eagles' desertion.

1975—"February 17, Rainy-45°. I walked in and found that vandals had loitered within gunshot range of the nest a few days earlier. There were tracks in the snow, empty 20-gauge and 12-gauge shotgun shells, an empty .22 caliber cartridge box and a broken liquor bottle. One eagle was visible. It must have come off a perch behind me to the west. It circled once then headed north toward the lake and was not seen for the remainder of the visit."

I was puzzled by the eagles' behavior throughout this period. They should have been very active at the eyrie, and adding to it, but only occasionally did I see one of them there.

Have they built another nest? This proved to be the case, and I found nest No. 3, in the top of a white pine a mere 14 inches in diameter. The nest was only 45 feet from the ground supported by the only limbs remaining on the tree, a tuft at the top. Presumably the eagles hastily abandoned their old nest because of the disturbance mentioned above and built this one.

Why would the eagles make such a seemingly poor choice? There were many suitable large trees available. However, this eyrie was well hidden and could not be seen by anyone. The tree was one of a group of white pines. To gain access to this nest, it was necessary for the eagles to hover directly over it and drop straight down. If conceal-

ment was what they desired, it was an excellent choice.

Eyrie 3 was much smaller than No. 2 when I first found it and appeared to have been rather hastily built. A large clump on the edge furthest from the trunk seemed to be falling away and hanging. I estimated the nest to be 3-1/2 feet across and about 2 feet in depth. This nest is further north on the ridge and is less than 200 yards from the first nest in the hickory, which blew down in 1972.

"March 18, I believe on this day the eagles started to incubate in their new nest in the pine.

"March 25, Cloudy-32°. At 1 p.m. the eagles are not incubating though both are soaring nearby. They drift south up the valley, passing first the new, then the old nest.

"March 26, Cold and Windy-28°. Was astonished to see both eagles perched back at eyrie 2 in the oak. After observing this, I decided to inspect the nest in the pine, which I found after considerable difficulty, since I was approaching it from a new direction. Beneath the nest I find many droppings, three pieces of uneaten fish, which appear to be pickerel, a jawbone of another fish and most important, three pieces of eagle eggshell. These pieces would constitute nearly half of the entire egg."

I believe a raccoon was the cause of the destruction of this egg, between March 22 and March 24. Visits made at a later date when there was snow on the ground proved there were raccoons in the area. There were tracks in the snow 20 feet from the nest tree and raccoon droppings at the base of the tree.

"March 28, Sunny-54°. There is a strong possibility the eagles are incubating for the second time in the 1975 season and back at eyrie 2!

"March 30, Snowy-32°. The eagles are definitely incubating, back at the old nest. It can be at the most 8 days, at the least 4 days, since they were incubating in their new nest in the pine. It cannot be pinned down more closely since I do not know the exact date when the egg in the new nest came to grief."

On April 3 rain ushered in a severe storm; the next day it turned to snow which continued through to the 6th and closed airports in Chicago, Buffalo, and Rochester. It was one of the most severe spring storms in years.

"April 7, Cloudy-30°. The eagles are not incubating. (Visits on the 9th, 11th, and 14th confirmed this.)

"April 16, Sunny-50°. Investigating at the eyrie for the possible cause of the abrupt termination of incubation, I found the remains of an eagle egg directly below and a little to the right of the eyrie. About 70 feet from the nest tree and directly under one of their

favorite perches in a white oak, my son Daniel found a dead raccoon. From the position of the raccoon, lying on its back and its body slightly twisted, possibly it had been killed at the eyrie by an eagle. The eagle may then have flown to this tree and dropped the 'coon. There were eagle droppings all around and on the dead 'coon. It had been in this position for several days."

It is difficult to determine the reason for the second unsuccessful attempt to incubate. Was it the severe storm or a raid on the eyrie by raccoons? The dead raccoon weighed a little over 7-1/2 pounds. There were no eagles visible during this visit.

The eggshells retrieved during the two unsuccessful attempts to incubate during 1975 in eyries 2 and 3 were sent to Dr. David Peakall, Department of Environment of the Canadian Fish and Wildlife Service. He reported that the shell was about 30% thinner than in pre-DDT days and that the shell membranes indicated substantial contamination with DDE and PCBs (see Appendix).

Discussion:

1. Possible laying of the first egg of a clutch in one nest, the second in another:

Reviewing the eagles' nesting attempts in 1975, as outlined above, the pair constructed, apparently hastily, a new nest, as a result of disturbance near the old one. At least one egg was laid in the new nest and incubation, or at any rate prolonged sitting on the nest, began. Then this nest was broken up, probably by a raccoon; fragments of eggshell were later found beneath the nest. The eagles promptly shifted back to the old nest and were incubating there not more than 8 days later. This nesting was broken up too, probably in the same way and again eggshells were found beneath the nest, leaving no doubt that at least one egg had been laid this time also.

It is well known that when birds lose a clutch of eggs, they will sometimes lay another, either in the same or another nest. Hawks usually do so only if the eggs are lost early in incubation, and even in a medium-sized species such as a Peregrine Falcon or a buteo, the process takes a couple of weeks. One would expect it to take even longer in a species as large as the Bald Eagle, and it is obvious that there was not time for this to occur as part of the events of 1975.

Eagles probably never lay an egg more often than every other day, especially in cold weather, and 4 or 5 days may elapse between each of the two or three eggs. On the other hand, especially in the north where freezing temperatures may occur well into the nesting season, the eagles would have to protect the egg or eggs from freezing and

possibly from predators by sitting on the egg from the day it was laid.

The only logical conclusion to be reached from the above is that these eagles started a clutch in the hastily constructed new nest; when this was broken up they completed the clutch (which in this case probably meant laying the second egg of a two egg clutch) by abruptly switching back to their old nest. I am not aware of such opportunistic behavior in any bird.

2. Raccoons as enemies of the Bald Eagle:

In recent decades the raccoon has had a population and range explosion. Now that its fur is back in demand, its numbers will hopefully be reduced to more reasonable limits. It is well known that raccoons break up many raptor nests. They follow by scent the trail of humans through the woods and climb any tree that man has climbed. Aside from that, they locate nests by smelling the prey brought to the nest by the raptor to feed the female or later the young.

But would raccoons be able to break up the nest of a raptor as large as a Bald Eagle? I have here given circumstantial evidence that they did so on two or three occasions. To be sure, in Florida some eagles raise young in areas infested with raccoons. But perhaps the latter are not as ravenous as those trying to find food in snow-covered northern woods, just after coming from hibernation. Even if the raccoon were doing no more than sleeping in the eagles' nest on a sunny day, it might cause abandonment.

Bald Eagle nests, especially in areas where the species is rare, should be protected from tree-climbing predators such as raccoons by putting suitable shields on nest trees.

3. Eagles and pesticides:

In 1972 an addled egg of this pair of eagles was chemically analyzed (see Appendix) and found to be the third most heavily contaminated Bald Eagle egg analyzed up until that time. Yet one year later this same pair hatched and reared a young one—their only success in a decade or more. The moral is, perhaps, that if the campaign against the worst pesticides and seed-dressings (those containing chlorine or mercury) is continued, the comeback in affected wildlife may be more rapid than once hoped. But when a species is reduced in major parts of its range to one pair per 40,000 square miles (the approximate area of New York State) drastic measures are clearly required to save it.

Even when, as with the present site, thousands of people are drinking the water of a lake, it is not always easy to regulate spraying

on the fields and forests whose run-off drains into it. Hopefully however, we are past the time when there will be direct spraying of the lake slopes with DDT or its equivalents, such as occurred in 1957 and the following years.

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APPENDIX

Pesticide Analyses

1—Addled egg removed from nest on May 22, 1971; analysis courtesy of Dr. Eugene H. Dustman and Dr. William L. Reichel, Patuxent Research Center, U.S. Fish and Wildlife Service.

"The egg was examined and opened and the following items were noted:

Length 7.08 cm. Breadth 5.31 cm.

Total Weight 66.0 g.

Contents: addled—no sign of embryonic development seen.

Shell thickness: 0.52 mm (adjustment made for loss of inner shell membrane).

Estimated egg volume: 105 cc.

Specimen No.	Estimated Volume	Contents	Weight, g	
			Aliquot	Lipid
71-117	105	50.41	20.02	1.75

Analysis: Organochlorine pesticides, PCB and mercury.

Results: ppm wet weight (a) and ppm corrected wet weight (b).
Corrected wet weight based on volume.

Chemical	a	b
p,p'-DDE	53.0	25.4
p,p'-DDD	2.1	1.0
p,p'-DDT	0.26	0.1
Dieldrin	0.49	0.2
Heptachlor Epoxide	0.05	0.02
PCB	20.0	9.6
Mercury	0.47	0.2"

2—Analysis of egg shell and membranes found beneath nest on April 16, 1975. (2nd attempt and 2nd egg found.) Analysis courtesy of Dr. David B. Peakall, Chief, Toxic Chemicals Division, Canadian Fish and Wildlife Service, Ottawa.

“The eggshell fragments of the bald eagle are around 0.40 mm in thickness, 30% thinner than pre-1947 value of 0.58 mm. The residue levels calculated, back to whole egg, wet weight, are 48 and 57 ppm DDE and approximately equal amounts of polychlorinated biphenyls (PCB's). Analysis of membrane samples is less accurate than work on the whole egg; but the values show substantial contamination and enough eggshell thinning to cause difficulties.”

3—Analysis of Osprey found dead near the eagles' nest on May 3, 1969.

As noted above the Osprey had a broken neck and may have been killed by an aerial blow from one of the eagles. Analysis courtesy U.S. Fish and Wildlife Service.

“The cause of death of this osprey was not determined. Chemical residues were not enough to account for death. Dieldrin levels were only about one-quarter enough to cause death. The DDE plus DDD are little more than half enough to be lethal. Whatever the cause of death the bird lost much weight before dying and this resulted in existing chemical residues becoming concentrated to a higher level than they would have reached otherwise.”

62 Main Street, Dansville, N.Y. 14437

ABOUT THE AUTHOR

Tom Rauber's consuming interest in birds of prey began as a casual hobby. However, as has happened to many other people, the interest intensified as he learned more about this magnificent group of birds. He considers the work on the last nesting pair of Bald Eagles in New York State as his most rewarding study. He also is deep into wildlife photography, having photographed extensively in the west. He and his wife Mary Ellen, and their six children, live in Dansville, New York.