A LATE WINTER WALK

Today, the sixteenth of March 2000, is the day before St. Patrick's Day. It is still winter. In Vermont where I teach at the university, we are only three-quarters through the woodpile, our stash of stored solar energy collected by trees. Not a single sprig of new green is yet in sight in all the woods; the leaves, the most efficient and most beautiful solar collectors ever devised, are not yet active. But their construction material—the sugar to make them—is already rising up the tree trunks, and in only four more days the sun will cross the celestial equator, and on this, the vernal equinox, the length of the day will become equal to that of the night, marking the official but not the real end of winter. In only one more month the ice here will begin to lose its grip. It has been a winter with much snow, and I can't resist going out into the winter woods to have a look around and experience winter. But I must choose to experience in order to write, and I decide to try to focus, arbitrarily, to find the nest of a crossbill, a strange bird if there ever was one, in the woods of my camp in Maine.

Here is Wendell Taber's (in Bent 1968) experience with white-winged crossbills many years ago:

> Smoke rises straight in the frosty stillness of an early September morning. Slowly the mist clears to reveal a tiny body of water. Tucked in at the 3, 500-foot level in a region where the tree line is around 4, 500 feet or less, Speck Pond lies nearly surrounded by the steep, towering, coniferous-clad walls of those wild Maine peaks, Mahoosuc and Old Speck. From across the lake comes a white-winged crossbill, then another, and yet another. Others appear, seemingly from nowhere. Soon a small inquiring flock has assembled, calling constantly as if to summon yet more birds. As my companion and I stand a foot apart talking, a brilliant male dashes by at our knees. A bird alights on my friend. Everywhere birds are busily foraging on the ground, gleaning food too minute for us to see. They explore the rock fireplace or pass beneath those long flattened logs that form the retaining wall and bench at the front of the lean-to. Quickly becoming acclimated, they enter the lean-to itself to pry around in the dried balsam needles of the built-up bottom. I have watched birds equally at ease in a long, dark, windowless cabin penetrate into its inner-most recesses. Inquisitively, a resplendent male alights on the top of a log, resting at an angle against the rock wall of the fireplace. While the bird watches us preparing breakfast, the lower end of the log, not 3 feet away, burns merrily. We enjoy the birds while we can; indeed next year there will be no enticing crop of cones, and the birds will have vanished. Somewhere, closer to the west, coastwise, they will have located a new food supply.

I want to focus on crossbills because they are here *this* year, and that's a treat.

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Years go by when the white-winged crossbill (*Loxia leucoptera*) are absent. John James Audubon (quoted in Stone 1937) wrote at Camden (New Jersey) that in the first week of November 1827, “they are so abundant that I am able to shoot, every day, great numbers out of the flocks that are continually alighting in a copse of Jersey scrub pine, opposite my window.” They were then present in the winter of 1836–1837, and did not reappear until the winter of 1854–1855, when they were reported to be “so tame that they could be killed with stones.” Like the great gray owl, the crossbills are northern birds, and northern animals are commonly tame as they have little experience with humans. They come south only sporadically.

I remember seeing the crossbills when I was a boy. Undoubtedly they have been back to Maine since then, but it was not until this winter that I first began to think I might finally have a chance of getting intimate contact by actually finding their nest.

Finding a bird’s nest, like making a scientific discovery, often depends upon a good deal of luck. One can increase one’s chances considerably by applying standard methods. First, you have got to make sure the bird occurs in your area. You must then sleuth out its specific habitat. You next identify the breeding season, primarily by listening for singing males. If males are singing, then breeding territories are likely being set up and/or mates are being attracted. The often very specific breeding sites then have to be identified within that habitat. After that, you start observing the individual birds, preferably at dawn, when they are most active. Myriad clues give hints of nest-building readiness or progress. These include seeing your bird with nesting material or food for its young in its bill. Finally, you follow your bird, watching its every move, trying to divine its every intention, and all the while you try to be unobtrusive. Finding a bird’s nest is a bit like trying to capture a secretive animal, perhaps a water shrew or a pygmy shrew, that may be everywhere yet is nowhere seen. “Finding a bird nest” the nature photographer Eliot Porter (1966) wrote

> is a skill for which all the guide books, all the geographical check lists and life histories, and all the learned volumes on ornithology are of little help. The nest finder must go out into the fields and woods with his wits sharpened to a razor’s edge, with all his senses tuned to their highest pitch, and with his mind free from the distractions and preoccupations that burden the society he has temporarily left behind. His

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> consciousness must be focused on the world outside himself, in which he must move without self-awareness. If he succeeds in attaining this rapport with nature, all creatures, as Thoreau said, will rush to make their report to him. He will learn who his companions are, where they are, and what they are about. All their activities will be as shouted declarations, and no secrets will be kept from him.

My expectations are modest. I go with the flow, but the start of my journey, as in any of scientific discovery, starts from precedent. I had seen the birds previously in December and then again in February, and I hoped to see them again now, in March. In December they were still traveling and feeding in flocks, so nesting had not yet started, but by mid-February the raspberry pink males had left their flocks and were singing their loud, musical warbles and trills, while the golden-brown females hopped unobtrusively in the spruce branches nearby. There were mutual chases; the flocks had disbanded and breeding was about to begin. However, I saw no nest-building, and the presence of females out of the nest meant that eggs had not yet been laid. Given that it takes about a week to build a nest, and three or four days to lay three to four eggs, plus about two weeks of incubation, I calculated that now, in mid-March, they should be close to finishing with incubation.

Crossbills raise their young when the seeds of spruce or pine cones are most plentifully available. This often requires them to lay their eggs in the winter. Nests with eggs have been found in New Brunswick, Canada, in the middle of January, and in February near Calais, Maine (Smith 1949). Crossbills are reputed to breed at almost any time of the year depending on any of a variety of different kinds of cone seeds they may find. In contrast, the crossbill’s relatives in the family of finches to which they belong, our goldfinches as well as European goldfinches, are the latest-breeding birds; they delay breeding until August, when *their* seeds (thistle seeds) are ripening.

Finches are strikingly colorful birds, but perhaps even more amazing is their unusual and varied bill morphology, adapted for extracting thistle seed, cracking cherry pits, or prying seeds from under stiff cone bracts. Crossbills’ bills look misshapen, as from some developmental defect. Their long and slender (for a finch) two-centimeter-long upper bill crosses over a one-half-centimeter-shorter lower bill. By inserting their partially open bill under a cone bract and then closing the bill, the bill-tips separate by about 3 millimeters, applying strong leverage

laterally so that the bract is pried away from the cone. The seeds under it can then be reached with the tongue. Given their unique bill structure, adapted for extracting the seeds from pine and spruce cones; their wide wanderings over the continent in search of seeding conifers; and their specific timing as to when they nest, crossbills are consummate conifer specialists and they are a truly northern or boreal species.

Most of the nest descriptions date more than a century ago, from the heyday of the great naturalists. These descriptions whetted my appetite. The deep cup nests of crossbills had almost always been found in dense spruce trees from as low as seven feet up to seventy feet high. They are reputedly built of spruce twigs, and variously lined with “wool and moss,” “rabbit fur,” “moss and animal fur” (Macoun 1909), “felted black wool-like lichen” (Grinnell 1900), and “long black slender tendrils resembling horse hair” so that the nest appears “nearly black.” The eggs have been reported as having a ground color of pale blue, bluish-green, greenish-white, or creamy-white and they are marked with scattered spots and blotches of “pale chocolate,” “pale lavender,” “ashy-lilac,” “scrawls of black,” and “lines of bay and fawn-brown.” Why would nature produce such beauty in such a temporary thing as an eggshell that the bird sits on and hides? The young are “sooty black” and covered with down, and when they gape for food, their mouth linings shine a “scarlet” or “bright purple red.” In this case the bright colors are signals. They induce the parents to notice and feed their young, amplifying the begging response.

My anticipated winter excursion to see crossbills, or for whatever looking for crossbills might yield, I had driven to Maine in the night. Parking my pickup down at the bottom of the hill below the cabin, I saw only a white hillock hiding my neighbor’s truck; it had snowed much here. I strapped on my snowshoes and was relieved to find the walking easy since the snow was thickly crusted over. The moon was not yet up as I walked by starlight.

A barred owl hooted on York Hill and for a minute or two a second one answered from Larkin Hill on the other side of the valley. It has been a good year for maple, beech, and oak mast; there is a good mouse population. Then I heard only the steady crunching of my snowshoes on the snow. I strained my ears hoping to hear a coyote concert or maybe a saw-whet owl. But the woods soon became eerily silent.

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Up at the cabin the snow had slid off the roof on the uphill side, piling up above the back windows and above the top of the back door. Thanks to the downhill grade at the front side of the cabin, I could still get inside. I quickly built a fire and checked the guest log, reading that one visitor had come on February 18 and he had reported “cold, -10°C, and gusty winds. Deep snow. Tough even on snowshoes.” A lot of snow had come since he had been here, because I had seen no trace of his tracks while coming up. And then I crashed into bed.

I was almost asleep when I was serenaded wide awake by howling coyotes perhaps a mile off, toward Wilder Hill. After I was again almost asleep, I heard the faint, hollow, almost pulsing booming rhythm of a great horned owl. I sprang out of bed and opened the window to hear it better. The booming came from near the swimming hole in Alder Stream, and memories flooded back of Bubo, my great horned owl, who had followed us down there to bathe in the pools by the rocks. Perhaps it was he. It seems hardly possible, but a sleepy longing is kept alive on occasions such as this, which are not infrequent.

I awoke near daybreak and groggily forced myself up and onto snowshoes, to be out into the woods quickly. I beat the first rays of the sun coming over the ridge by Kinney’s Head, then watched them shining golden on the red spruces where I had observed the crossbills singing and cavorting a month earlier. A mourning dove started its mournful, owl-like predawn serenade. Two more called from the west and north. There was not a breath of air, and except for the dove’s continuous dawn chorus of coos, it was still.

Minutes later it got noticeably louder. A hairy woodpecker commenced with hollow-sounding drumming. Two others chimed in, hammering also on dead “drums” of wood, sounding a different pitch but the same cadence. Within half an hour of wandering about the woods, I had seen two pairs of red-breasted nuthatches and a small flock of chickadees. I had heard purple finches and pine siskins sing. A small flock of evening grosbeaks flew over giving their clear bell-like calls. A raven perched in the pines and called *rrap, rrap, rrap...* The rhythm and the cadence sounded like that of my raven friend, Goliath, who has lived with me around the cabin and who has a mate and who nests annually and raises four to five young on a specific branch, on a specific pine tree next to the camp. No crossbills. Not one peep. Could they have left after exhausting the red spruce

seed crop? Did the recent big snowstorms destroy their nests?

The spruce trees were still heavily laden with enough cones to make the tops of the trees look brown. However, while spruce cones stay long on the trees, the *seeds* fall out of them as the cones dry and the bracts curl out. A month earlier spruce seeds were strewn about on the fresh snow and chickadees were hopping on the snow foraging for these shed spruce seeds, while red-breasted nuthatches were picking them out of the cones in the tops of the trees. I found one spruce tree with several hundred cones under it on the snow. These cones had been chewed off and dropped by a red squirrel.

Warmed by the sun they had then melted into the snow. So this squirrel had not been in any hurry to gather them up after dropping them.

Impulsively I picked up a handful of the cones. All had only the first few bracts chewed off near the base of the cone. The snow surface was littered with cone bracts; the squirrel had been feeding on the cones as it was harvesting them up in the tree. But why did it just drop and leave most of these cones unopened? Back at the cabin later I examined five of these discarded cones. Each had on average 40 bracts, and a full cone has 2 seeds under each bract. Thus, a full cone produces about 80 seeds. The five cones could contain close to 400 seeds, but I found instead only a total of 23, or about 5 seeds per cone remaining. No wonder the squirrels had dropped the cones after sampling them, or not gathered them up later.

How many seeds must a cone contain before a squirrel decides it is not worth the effort to invest more energy and then discards it? A squirrel can eliminate the possibility of sampling the same bract twice, because it must chew each bract off in order to see what’s under it. However, crossbills cannot know for sure which of the 40 bracts on any one cone it has sampled has seeds under it. Since it can’t very well memorize which bracts have been sampled and which not, it likely can’t help but sample some bracts more than once. It may therefore need to have fairly full cones in order to make the hard work of separating the stiff bracts from the cones worthwhile. On the other hand, prying bracts apart might be easier than the squirrels’ way of chewing them off. Had the crossbills left here because the cones had by now shed too many seeds?

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This was not a question I could hope to answer, but it did induce me to climb to the top of a spruce tree in order to retrieve a twig laden with cones. The bracts of the cones were opening up, and when I banged limbs that had cones on them I caused showers of seeds to twirl down. I examined ten cones, having 40 to 50 bracts each, finding that seed number per cone (20, 6, 36, 8, 2, 35, 28, 16, 12, 17) was considerably higher than on my previous count of squirrel-discarded cones. Was this an unusual tree, or one that by chance crossbills had not visited? I was obviously not going to answer this question just now, either. But it was a fabulous day with deep blue sky, rising temperature, and the crust was still solid for excellent walking on snowshoes. I'd better make the most of it.

Walking on, I eventually found two other spruce trees where squirrels had been feeding on cones. Ten out of 321 had only a few bracts eaten off at the base (where a squirrel always starts) and the rest of the cones were then left. That is, they were discards.

But seed number per bract this time was high—similar to those on trees. However, most of these seeds had small holes in them as though they were infested by a tiny insect. What was originally a simple question was getting more complicated with every bit of data I collected. It was not just a one-weekend project. My seed counting assured me that spruce seeds were available, though variable and spotty, but I got no insight into the lack of crossbills, and instead raised questions about red squirrel behavior.