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A STUDY OF THE NORTHERN RAVEN

BY W. BRYANT TYRRELL

Plates 1-3

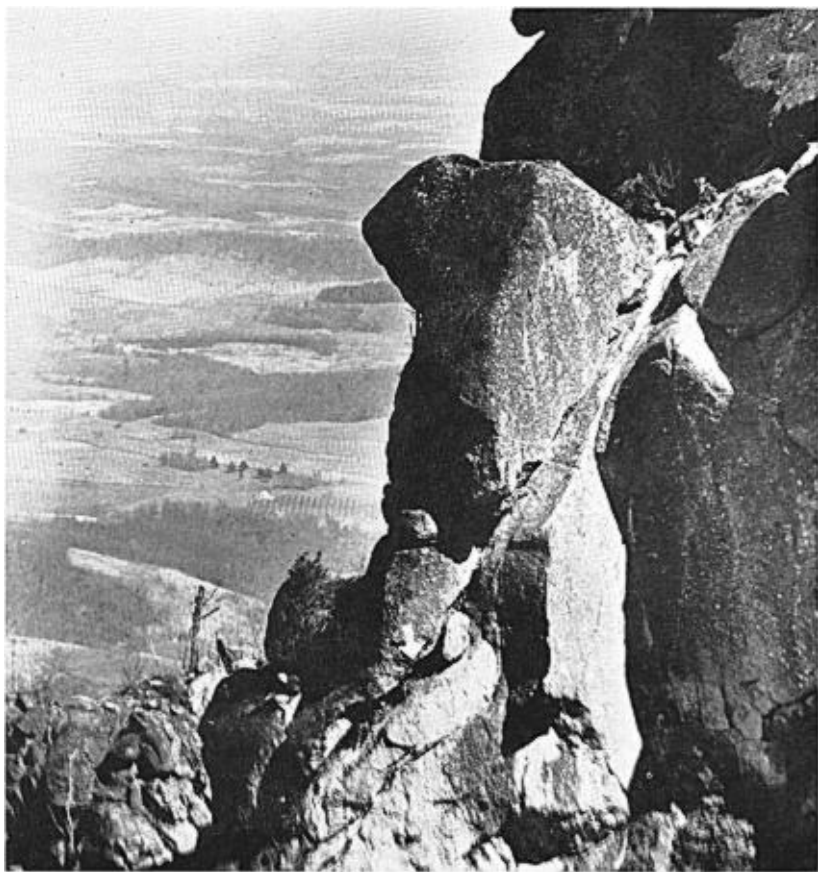
THE first time that I ever came in contact with the Northern Raven (*Corvus corax principalis*) was in the spring of 1928 in the virgin white-pine forests along the shores of Lake Superior, at Whitefish Point, in the Northern Peninsula of Michigan, where several specimens were collected. The next time was in the Shenandoah National Park in Virginia in the spring of 1937. It is with the Ravens in the latter region that we have worked during the past few years. The first nest, which contained nearly-fledged young, was found on May 9, 1937, on Old Rag Mountain, while I was climbing the mountain with a group from the Mountain Club of Maryland, and it has been only through the efforts and help of some of the members of this club (namely, Mr. Osborn Heard, Dr. William Kemper, and Miss Alice Brown) that these studies have been possible, as I am too heavy to do any rock climbing.

Altogether, three nests were found on two mountains in the Shenandoah National Park, and both are accessible from Skyline Drive. The first and second nests were on Old Rag Mountain and the third nest was on Stony Man Mountain.

HISTORY OF THE NESTS

The nest on Old Rag Mountain, as stated above, was the first nest located. It was found on May 9, 1937, and contained four nearly fledged young, two of which we were able to reach by making a rather difficult climb.

On Saturday, March 25, 1938, a group again visited Old Rag, and three of the party climbed the mountain with bedding and food to spend a cold, miserable night in a wind-swept cave near the summit



NORTHERN RAVEN.—SITE OF NEST (INDICATED BY WHITE ARROW) ON OLD RAG MOUNTAIN, VIRGINIA, MAY, 1937.

where the temperature dropped considerably below freezing. We spent the morning scrambling over rocks, looking for the nest, hoping to find it either where it had been the previous year or near by on another ledge, but we had no success. About noon, the rest of the party joined us and one of the rock-climbing group went down to the last year's nest, using a rope, only to find the nest empty with no evidence of it having been used. In 1939 we were again unable to find the nest, although we made two trips and searched all of the cliffs and rock faces of which we know.

On Saturday, March 30, 1940, three of us again went to Old Rag and stayed overnight in Old Rag Shelter, one of the attractive open shelters in the Park, built from dead chestnut lumber by the C.C.C. boys. About dusk that evening, we had a most glorious view to the west with the distant mountains lost in a beautiful deep blue haze, over which hung billows of fleecy white clouds. As dusk deepened into darkness, with Old Rag silhouetted against the eastern sky, we crawled into our sleeping bags and were soon asleep. It was delightful to see the sun rise over Old Rag in a clear and sparkling sky, and it was not long before we saw a Raven—then two and three, circling high over the mountain. By ten o'clock we were on top of the mountain, hunting over the cliffs and rock faces near the place where we found the nest in 1937, but after several hours of searching we had found no indication of either a nest or a roosting place, although the birds were flying above us most of the time. We were about to leave when we met some other climbers and asked if they had seen any Ravens. They replied that they had not, but they did know where a Crow was nesting on a ledge. They showed us the way to the nest, fully a quarter of a mile down the mountain from the Raven nest that we found in 1937, and much more accessible. The Crow's nest proved to be, in reality, a Raven's nest. It was on a ledge near the edge of a tumbled pile of huge boulders, and could be reached easily by the use of a rope, dropping over the edge of a large rock to the ledge on which the nest rested, about six feet below. There in the nest we saw, not eggs as we had expected, but a pile of nearly naked young, although we could not tell how many there were. From March 30 on, this nest was visited nearly every week end (in all kinds of weather—mostly bad) until May 4, when it was found empty.

On March 23, 1941, about a week earlier than our visit in 1940, the nest contained three young and two eggs, but on April 12 the nest was empty.

In 1942, because of gas rationing, we were able to visit the nest

only once. We found it empty and in a dilapidated condition. On our trip up the mountain we neither saw nor heard adults or young, and I believe the birds had gone to some other part of the Park, where food was more abundant and people were fewer.

The third nest, on Stony Man Mountain, was found in May, 1939, when the three young were about ready to leave. This nest was visited several times in 1940 and 1941, but in 1942 we were able to make but one trip because of gas rationing.

Altogether the three nests were visited 17 times. This may seem to be comparatively few, but when it is realized that each visit meant a week-end trip and a drive of nearly 200 miles, it may not seem to be such a slight accomplishment, particularly when we had no "Uncle" to pay for the trips.

DISTRIBUTION

The Northern Raven, the more common and more widely distributed of the two subspecies in North America, at one time was to be found over all North America east of the Rocky Mountains, but is now found only in the more remote and isolated parts of the continent from Alaska to Greenland; south to the Great Lakes; along the Atlantic coast to Maine; in the Adirondack wilderness of northern New York; and in the higher Alleghenies as far south as Georgia. This is but a fraction of its former range. The last-named locality includes the Shenandoah National Park where, under protection, they seem to be increasing. I have seen as many as ten along the one-hundred-mile drive of the Park. Unlike the common Crow, which seems to thrive near civilization, the Raven has retired and is today as much a bird of the wilderness as it used to be.

In appearance, the Raven is much like the common Crow for which it is sometimes mistaken. It is glossy blue-black with some metallic luster, but is nearly twice the size of the Crow. The Crow is about 19 inches long and the Raven about 26 inches. Unlike the Crow, the Raven has long, pointed, lanceolate feathers on the throat, with each feather lying separate, one on the other, and not softly blended as in the Crow. The Raven also has a heavier bill than the Crow. To me, the Ravens are stately and rather sedate birds whose movements when on the ground are deliberate and dignified, but when in the air they appear to still better advantage, although to the unaccustomed eye they would not be distinguished from the Crow, unless they were accompanied by Crows, when their larger size would be apparent.

I believe that there is very little migratory movement among Ravens

—that they are permanent residents wherever they are found; we have seen them at all seasons of the year in the Park. Very few data are available and the banding files of the Fish and Wildlife Service have only four returns from a comparatively few banded birds. These returns are for birds banded in Nova Scotia and Labrador, and are all local. We have banded only eleven nestlings—five in 1940 from the Old Rag nest, and three in 1940 and 1941 from the Stony Man nest—and have had no returns from them.

It is believed that the Raven, like most of the larger birds, mates for life. From the actions of the two pairs at their respective nests, I would agree with this belief; undoubtedly, the same pair of birds used the same nest in successive years.

I have no data on the courtship.

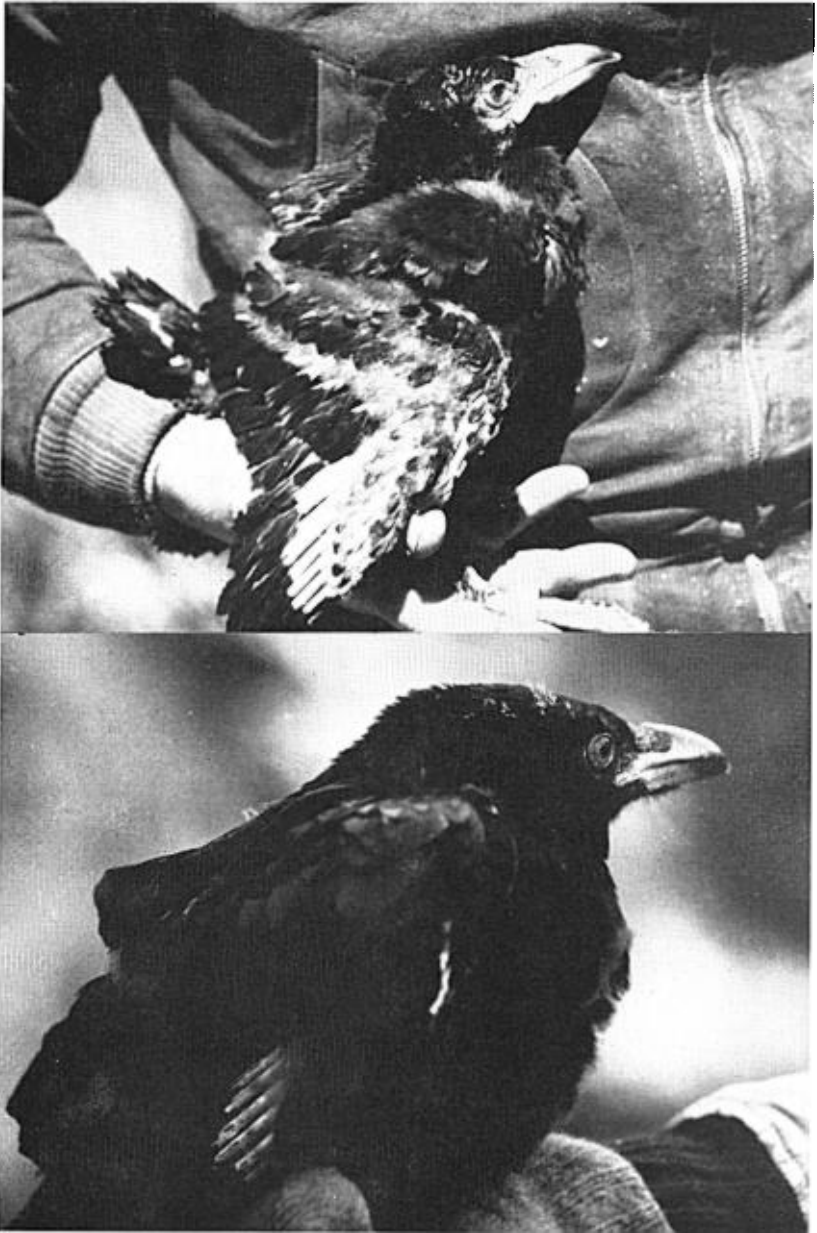
FOOD

The food of the Raven consists of anything edible, alive or dead, which it can catch, kill, disable, or pick up, and no doubt it is almost as varied as that of the Crow, but the greater part is probably carrion, with small mammals next. W. B. Barrows, in his 'Michigan Bird Life' (1912), says of a Raven that nested in a deserted building: "The floor of the building was strewn with pellets consisting principally of fish bones, skeletons of small mice and some insects." We were unfortunate in not finding any food remains at the nests, although on one visit there was an exceedingly strong odor of carrion. But in the files of the Food Habits Research Section of the Fish and Wildlife Service, we find mention of the following items: carrion, mice, squirrels, rabbits, and other small mammals, young birds, eggs of the larger birds, as ducks, herons, etc., fish, crabs, insects, corn, fruits, and seeds of juniper and similar trees. An incident was related to me of a Marsh Hawk that was put in a cage with a Raven. In the morning all that was found of the hawk was the leg bones and the larger feathers. Another interesting incident regarding the Raven's food was told to me by one of the Park naturalists. He said that often in the early morning they would find the trash cans in the picnic areas overturned and the contents strewn about. They had always suspected the raccoons or opossums, but one morning they discovered that the culprits were Ravens.

The most common call or note of the Raven is, as Chapman describes it, a hoarse, guttural, rolling *cr-r-r-cruck*. At times, particularly when we were at the nest, we heard other calls and notes, which are extremely difficult to describe. There was a sharp, staccato alarm-call when we were discovered at the nest, and a low, guttural note



NORTHERN RAVEN.—YOUNG BIRDS LESS THAN ONE WEEK OLD.



NORTHERN RAVEN.—(*Upper*) YOUNG BIRD ABOUT THREE WEEKS OLD; (*Lower*) ABOUT FOUR WEEKS OLD.

which we interpreted as a soothing call to the young. On one occasion at the nest on Stony Man, after we had flushed the female from her eggs, she circled, swooped close to us, scolded, and then flew to a near-by dead tree and uttered a series of calls that sounded like a person snoring.

NESTS AND EGGS

The three nests that we found in the Shenandoah National Park were in crevices or on ledges on cliffs or rock faces. The first nest was rather inaccessible, and could be reached only by a difficult climb with the help of a long rope. The second nest was on a ledge that could be reached easily by dropping about six feet over a large boulder. The third nest was on a ledge about fifteen feet down the face of a 200-foot cliff.

Farther north where rocky ledges are not available, Ravens often build in tall trees, preferably pines. In most cases the nests are used year after year. We were told that the first nest we found had been used for several years; the second nest was used only three years; and the third nest had been used at least four years, and probably more.

The nests were composed of sticks, from a few inches to three feet in length, and from one-eighth to one-half of an inch in diameter, with an inner cup lined with shreds of grapevine bark and what looked like sheep wool and opossum fur.

The size of the nest depends on the size of the ledge on which it is built. The first nest was in a rather small crevice and was comparatively small; the second nest was on a ledge and measured 32×38 inches, with the inner cup about 12 inches in diameter and 7 inches deep; the nest on Stony Man was on a small ledge and was about 18×24 inches, with the inner cup about 10.5×12 inches.

The egg of the Raven is roughly about 1.5×2 inches, or about the size of a small chicken egg. The eggs are greenish, splotched and spotted with various shades of olive brown. From three to seven eggs are laid, about the first week in March. We found two eggs in the Stony Man nest on March 1, 1942. This undoubtedly was an incomplete set, for in the three previous years, three young had left the nest each year. On March 9, 1940, Miss Bonnell (who had shown us the second nest on Old Rag) found six eggs.

The incubation period is about three weeks, and it is believed that both parent birds help with the incubation as well as with the care and feeding of the young. In the nest that contained six eggs on March 9, 1940, the young were about a week old on March 30, and in 1941, on March 23, a week earlier than the previous date, the nest contained three young and two eggs.

DEVELOPMENT OF YOUNG

The young, when hatched or when only a day or two old, are not things of joy and beauty. In fact, they reminded us of grotesque gargoyles. Their eyes were closed and here and there on their otherwise downless bodies were small patches of grayish down. The abdomens were greatly distended and as smooth as a billiard ball but far more colorful, with bluish vessels showing through the dark pink skin, and the corners of their mouths protruded and hung down like jowls. The nestlings could utter only the most feeble sound, but could always react for prospective food, which they did whenever we touched them. The temperature of the nearly naked young in their nest was always high, even on the coldest days. We took a thermometer with us to determine this temperature, but unfortunately it was broken, even though we carried it in a metal tube.

Like most young birds, they grew rapidly, and in a week's time had changed considerably. A few feathers were beginning to appear, pushing off the down, and their feet and bills had developed disproportionately.

On our visit to the Old Rag nest on April 21, 1940, when the young were about three weeks old, we encountered the worst weather conditions that we had experienced. Up near the nest the ground was covered with snow, the trees and the exposed rocks were coated with ice, and there was a cold wind that must have been blowing thirty or forty miles an hour, and that penetrated all our clothes and chilled us to the bone. Although we were cold, the young Ravens were warm and comfortable in their nest, which was well protected from both wind and snow. They were well-feathered now, with little or no down showing, and they had the characteristic appearance of Ravens. It was so cold and blustery on that day that only one young bird was taken out, and it was returned as soon as possible. It was interesting to watch the bird when we put it on the rock above the nest. It made no attempt to keep its head into the wind and often got its feathers ruffled. Once it was almost blown off the rock. It was not yet able to stand on its feet, but managed to move along on its legs.

When the young were about five weeks old they usually had left their nest though not the care of their parents. On May 5, 1940, at the Stony Man nest, when the young were about five weeks old, they were still in the nest when we arrived early in the morning, but when the person who was lowered over the cliff got close to the nest, one bird flew with faltering wings, then another, and finally the third. It was interesting to watch them on their first awkward flight, for

frequently they would lose their balance in a gust of wind and drop several feet before righting themselves.

As I stated before, we were unable to find any food remains in the nest, nor did we see the parents feed the young, but it is believed they feed by regurgitation. On two occasions we made an improvised blind at the base of a dead tree about a hundred yards from the second nest on Old Rag. One person stayed in the blind while the others returned to the trail, making as much noise as possible, hoping to distract the attention of the adults and hoping that they would return to their nest, but the ruse did not work. The birds would fly over, craning their necks and looking down at the blind, fly toward the nest (no doubt seeing that the young were there) and then fly off over the rocks and be lost to view. After about an hour in a cramped position, sometimes numbed by the cold, we gave up the thought of them ever returning.

The attitude and actions of the two pairs of birds at their nest were extremely different. Usually when we arrived at the nest on Old Rag the adults were nowhere to be seen, but with the calling of the young when we were handling them, the adults would appear. One of the adults, which we supposed was the female, would become excited, although she never came very close to us. She would perch on a limb of a near-by dead tree and hammer away at it with her heavy bill, breaking off good-sized pieces, and then after fumbling them around in her bill, would shake them vigorously before dropping them to the ground. The other bird of this pair usually perched in a tree on the other side of the ravine.

The adults at the Stony Man nest acted quite differently. One of the pair was always at the nest and the other one was near-by. When we were still some distance away they would become excited and, when one of us went over the cliff down to the nest, both birds would swoop down and come within a few feet of him.

The worst enemy of the Raven is man. But under the protection of the Park these birds are increasing in numbers. As to their economic status, they are scavengers and no doubt do far more good than harm.

It is always with a feeling of deep regret that we realize that our visits to the Raven's nest are over for the year, but we are always planning and looking forward to our trips the next year, hoping only that the Ravens will again use the same nests.

Takoma Park
Maryland