BLACK VULTURE IN NEW YORK STATE — CONFIRMED NESTING AND OBSERVATIONS OF EARLY DEVELOPMENT

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ABSTRACT — The first recorded nest site of a Black Vulture (*Coragyps atratus*) in New York State was discovered on 27 April 1997 at a rock enclosure near the base of a 36 meter tall cliff (Bonticou Crag) on lands of the Mohonk Preserve, Town of New Paltz, Ulster County, New York. Ten site visits, including the date of discovery, were made over a period of 65 days from 27 April to 10 August 1997 to observe, photograph, and record the behavior and development of the nestlings. Data on egg dates, incubation period, nestling development and behavior are discussed and compared with similar data established for southern populations of Black Vulture.

INTRODUCTION

This discovery of a nesting Black Vulture (*Coragyps atratus*) is important because it is the first record of confirmed breeding of this species within New York State. Moreover, this article is the first photo-documented account of a nest site (the Bonticou site), and early development and behavior of Black Vulture in New York State.

Although considered rare just a few years ago, Black Vultures are now regularly reported in downstate New York. The New York Avian Records Committee (NYSARC) now requires a report only if the bird appears upstate. Its current status is rare to fairly common visitant (Andrle 1998).

Current North American range distribution maps of Black Vulture generally show southeastern Pennsylvania and northern New Jersey as its northeasterly range limit (e.g., Clark and Wheeler 1987). According to Bull (personal communication September 1998, citing Leck [1984]), the first documented breeding of Black Vulture in New Jersey — the nearest confirmed nesting site to the Bonticou site was at a cave in Hunterdon County, where 2 nestlings were observed in 1981.

In the northern Shawangunk Mountains of southeastern Ulster County, where the Bonticou site is located, sightings of Black Vulture by staff and associates of the Mohonk Preserve (Mohonk Preserve 1997), provide a nearly continuous 9 year record of this species, with as many as 7 birds recorded in a single day (e.g., 14 November 1989, 27 May 1993, and 8 October 1995). It appears evident that, despite its state-wide rarity, Black Vulture has extended its northern range limit and is now seen in every month of the year within the state (Andrle 1998). Consequently, it was considered inevitable that a Black Vulture nest site

would eventually be found in New York, particularly in the Shawangunk Mountains where substantial numbers of this species have been regularly observed for the past fourteen years.

OBSERVATIONS

Discovery and Characteristics of Nest Site

On 27 April 1997, a Black Vulture nest site with two eggs being tended by an adult with a second adult nearby, was discovered at a rock enclosure near the base of a 36 m high cliff (Bonticou Crag) on lands of the Mohonk Preserve, Town of New Paltz, Ulster County, New York.

The Bonticou site was discovered while photographing a "very approachable" adult Black Vulture perched on a large boulder within 3 m of the nest site. Soon thereafter, a second adult tending two eggs was observed from above through a south-facing opening in a cluster of large boulders (approximately 0 .75 m in diameter and 1 m deep). A second opening was soon found to provide access to the enclosure via a nearly level, tunnel-like east-facing side entry (approximately 4 m long, 1 m in diameter, and capped by a truck-sized rock).

Photographed from a distance of 2 m, the nesting adult was unaggressive, and did not hiss or exhibit threatening movements. Instead, it continued incubating for several minutes, occasionally making faint gurgling-like sounds while cocking its head sideways to look up at its observer. Two eggs approximately 10 cm in length, and marked with small, dark brown squarish-to-rectangular blotches on a speckled light buff background, were observed from a distance of 1.5 m when the adult moved to the rear of the enclosure. The Bonticou site was visited on nine subsequent dates and a summary of observations made during all visits to the nest site are recorded in Table 1.

Species Identification

The reluctance of various authorities to accept reported sightings of Black Vulture may be based on its general similarity to, and possible confusion with, the far more common Turkey Vulture (*Cathartes aura*), particularly when individuals of the latter species are observed soaring at a considerable distance, under backlit conditions. Fortunately, several diagnostic features of adults and chicks of Black Vulture (refer to the accompanying photographs), which readily distinguish this species from Turkey Vulture, were observed and photographed close at hand, namely: (1) the uniformly dark, nearly black plumage, grayish bare head, substantially shorter tail, and gray-white legs and feet of the adults, and (2) the buff-orange down of the chicks (n.b., the down of Turkey Vulture chicks is white). The tail of Black Vulture is much shorter and wider than that of Turkey Vulture and, in flight, its feet extend to the tip of the tail or beyond, often "dangling" beneath the bird as if it was about to land (the feet of Turkey

Vulture are positioned well back from the tip of the tail and are invariably held close to the body during flight). White primary patches near the wing tips of Black Vulture are also distinctive, particularly when seen from above. Although the underwing of Turkey Vulture is distinctly two-toned, white primary patches are not present. Further, when soaring, the wings of Black Vulture do not exhibit the prominent dihedral of Turkey Vulture, nor does the Black Vulture tip from side to side as dramatically as the Turkey Vulture during flight. Descriptions of distinguishing features of Black Vulture are provided in Bull and Farrand (1977), Terres (1980), and Clark and Wheeler (1987).

Environmental Setting of the Nest Site

The nest site was located 137 m above sea level, overlooking an expanse of the Wallkill Valley to the east. There was no evidence of a prepared nest within the enclosure. The eggs were lain on a thin layer of chestnut oak leaves covering a veneer of soil and underlying rock beneath the nearly level floor of the enclosure. A level platform rock (3 x 4 m) just outside the enclosure at the top of an open, south-facing talus slope of large conglomerate boulders (Shawangunk grit), provided a convenient landing and takeoff site for the adults.

The plant community surrounding the enclosure and talus slope was dominated by an open canopy of chestnut oak (*Quercus prinus*). The understory consisted mainly of scattered saplings of white pine (*Pinus strobus*), American chestnut (*Castanea dentata*), black cherry (*Prunus serotina*), and sweet birch (*Betula lenta*). Mountain laurel (*Kalmia latifolia*), blueberry (*Vaccinium* sp.) and wild sarsaparilla (*Aralia nudicaulis*) were also present in the understory. Boulders near the enclosure were partly covered with scattered grape vine (*Vitis* sp.) and patches of lichens, notably blistered rock tripe (*Lasallia papulosa*).

DISCUSSION

Nest Site

In its southern breeding range, Black Vulture reportedly nests on the ground under dense thickets; in the hollow base of stumps and trees, and in hollow logs; on the floor of shallow caves; on cliff ledges; and, in addition, in crannies of tall buildings (Terres 1980). Since the Bonticou site is the only Black Vulture nest site currently reported for the State, it is not yet possible to assess the range of potential nesting habitats that may eventually be utilized by Black Vulture statewide. It is noteworthy, however, that the Bonticou site is similar to virtually all active Turkey Vulture nest sites (i.e., those with chicks or unfledged juveniles) discovered in the northern Shawangunks by Mohonk Preserve research personal and associates, including the author. These sites are located in relatively undisturbed, difficult to access rock enclosures within talus slopes located at the base of low-to-high (approximately 10-30 m tall) southeast-to-southwest-facing cliffs and surrounded by a partly open, deciduous tree canopy

with a sparse-to-dense understory of shrubs (mountain laurel is usually present). The southerly exposure of these nest sites with open cliffs above and talus slopes below appear to provide optimal habitat for adult birds (e.g., cliff tops provide perching sites for thermoregulation, locating food, watching over nest sites, and accessing thermal updrafts) and their young (e.g., talus slopes with a labyrinth of cool, moist tunnels and enclosures provide extensive escape routes and hiding places from predators).

Shortly after discovery of the Bonticou site, Ed McGowan, a graduate student at SUNY Binghamton conducting field research on eastern timber rattlesnake (*Crotalus horridus*), observed an apparent Black Vulture nest site in a similar habitat (two adults in the vicinity of an odorous, "whitewash" marked rock enclosure in a shrub thicket near the base of a short cliff (McGowan, personal communication June 1997) in Minnewaska State Park Preserve, located off NYS Route 44-55 in the Town of Gardiner, Ulster County, approximately 12 miles southeast of the Bonticou site. The presence of eggs or young was not confirmed at the Minnewaska site, however.

Egg Dates and Development

Black Vulture eggs observed on 27 April at the Bonticou site, fall within the January-to-July egg dates reported for this species in Texas, Florida and North Carolina (Terres 1980) and coincide closely with 25 April as the 100-year average date of last spring frost recorded at the Mohonk Lake National Weather Service Cooperative Weather Station (Huth and Thompson 1997), located within 3 miles of the Bonticou site.

Air temperatures over the range of egg dates for southern populations of Black Vulture likely encompass those that occur from late April through early September in the middle Hudson Valley region of New York.

Two down-covered chicks, estimated to be 7-10 days old, were first seen on 7 June, 42 days after discovery of the nest site (refer to 1 June observations in Table 1). Although the actual dates of egg laying and hatching were unknown, the incubation period was estimated to be 32-35 days, similar to that reported by others for southern Black Vulture populations (29-32 days reported by Brown and Amadon [1968]; 39-41 days reported by Nice [1954], both cited in Terres [1980]). Nestlings were observed seven times over a period of 65 days from 7 June - 10 August. One unfledged juvenile disappeared between 20 June and 13 July. The remaining unfledged juvenile was estimated to be 68-71 days old when last seen on 10 August, and may have fledged by early September, as there was no evidence of recent Black Vulture activity at the site on 21 September.

Observations indicate that Black Vulture completed its breeding cycle (incubation to fledged juvenile) at the Bonticou site in approximately 140 days, which is approximately 30 days longer than the higher range of combined incubation (41 days), and development from chick to fledged juvenile (70 days),

reported for southern populations of Black Vulture by Nice (1954) and Stewart (1974), respectively; both cited in Terres (1980). In spite of the estimated 140 days required to complete a breeding cycle at the Bonticou site, air temperature was not considered to be a critical limiting factor to an anticipated expansion of Black Vulture breeding in New York. Long-term arrival date records of spring migrant avifauna from the Cayuga Lake basin of Central New York, the western Allegheny Plateau, and the northern Shawangunks (Mohonk Preserve) show significant trends toward earlier arrivals, which support growing evidence of a global warming trend, and may also account, at least in part, for the successful northward expansion of the Black Vulture breeding range.

When observed on 10 August, the unfledged juvenile demonstrated surprisingly fast, "Wild Turkey-like" over ground movement, but made no effort to fly, even for a short distance. At this stage of development, its ability to survive and to defend itself against predators appeared to be based on continued parental feeding, hissing and postural threats (wing flaring and flapping) and dodging rapidly in and out of, and hiding in, a labyrinth of small, connected rock enclosures. At one point on this date, the unfledged juvenile attempted to hide head-first in a small rock enclosure, leaving its rear half fully exposed. When hand-stroked and gently pried, the bird remained "frozen" in the hole, refusing to move. This behavior is consistent with reports by Murray ([1928]; cited in Bent [1961]) of birds jamming themselves into, and burying their heads in, cracks; and of young birds feigning death when disturbed (Lacey [1911] cited in Bent [1961]).

Confirmation of Nest Sites

Vulture nests, even those of the widespread Turkey Vulture, are difficult to confirm because of terrain inaccessibility and the cryptic nature of the nest sites. According to Meade (1988, citing Ritter [1983]), the Turkey Vulture exhibits a strong attachment for established nest sites, returning to the same nest site each breeding season. Black Vulture exhibited a similar fidelity for the Bonticou site as two eggs and an adult bird were observed in the nest enclosure on 25 April 1998. Unfortunately, one of the eggs mysteriously disappeared between 31 May and 3 June, and on 16 June the remaining egg was found opened and empty within the nest site, with no sign of a nestling.

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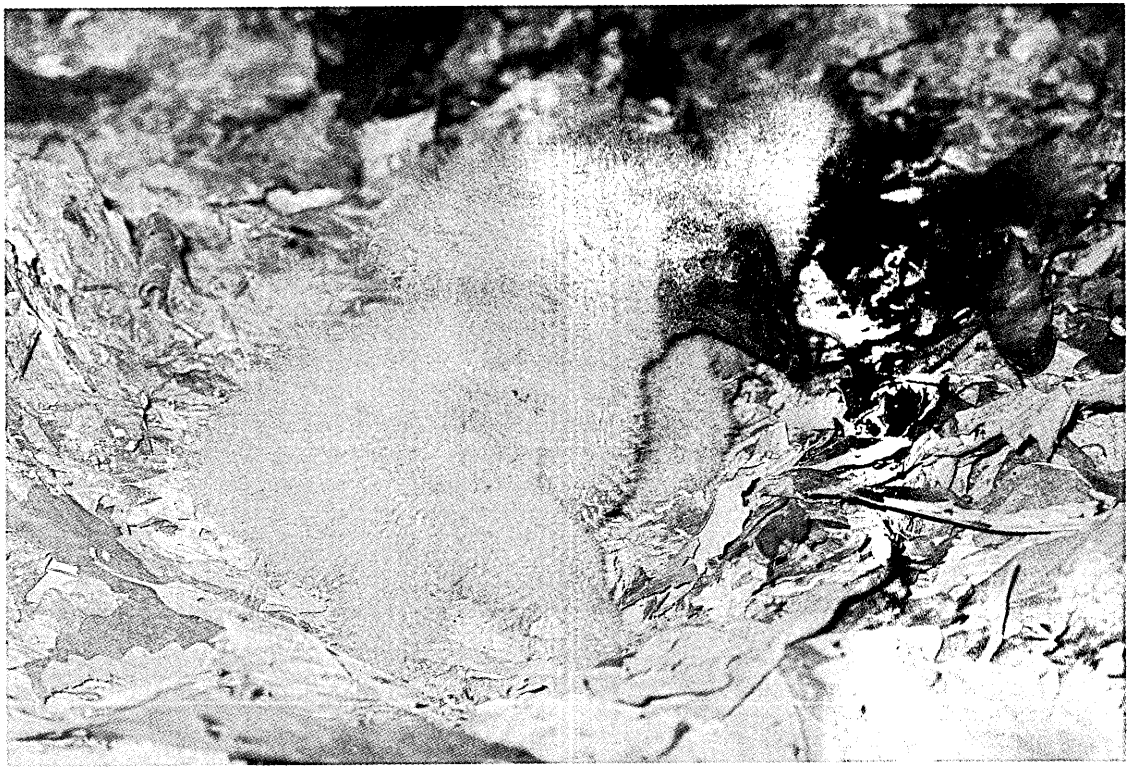
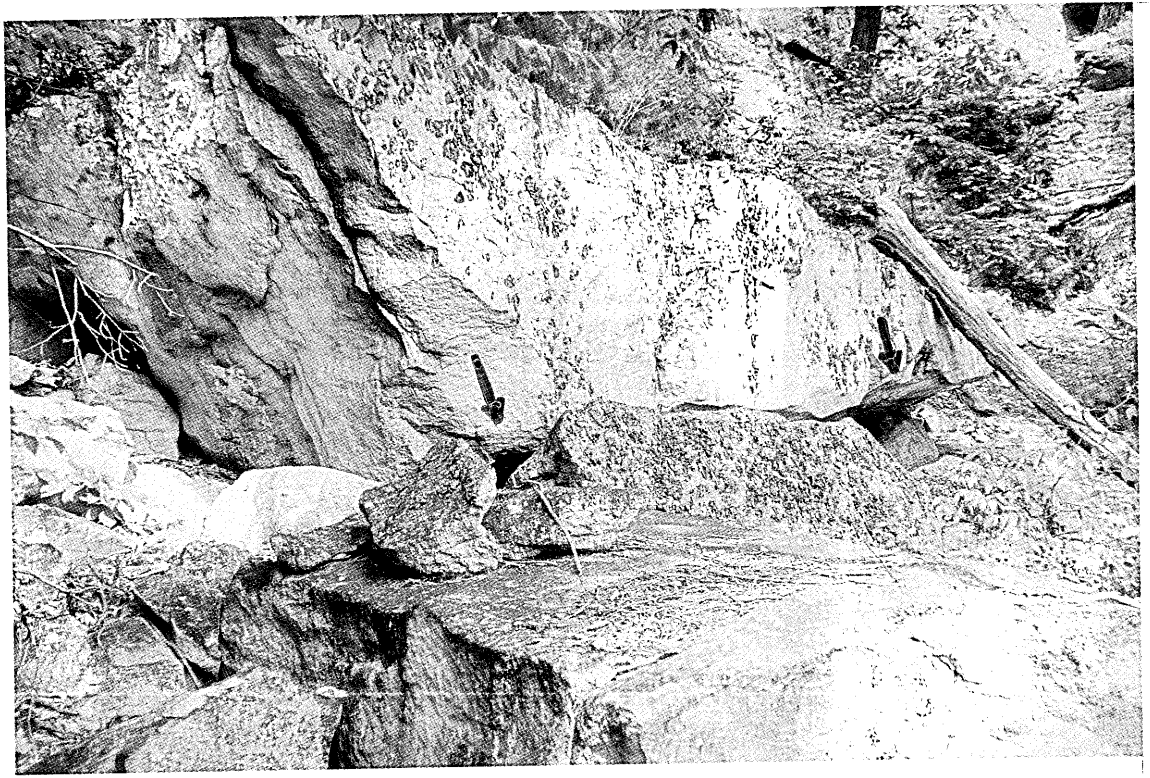
Table 1. Observations of the Bonticou Crag Black Vulture Nest Site

Date	Observations
27 Apr 97	Two adults, one incubating two eggs, each egg approximately 10 cm long; adults unaggressive; incubating adult stayed in place for several minutes before moving off eggs to rear of enclosure; both adults photographed from a distance of 2 - 4 m.
1 Jun 97	Single adult observed apparently incubating two eggs or covering recently hatched chicks (neither eggs nor chicks could be seen); adult photographed from a distance of 1.5 m.
7 Jun 97	Single adult with 2 chicks in buff-orange down, each chick about 18 cm total length (TL); adult and chicks quiet, un-aggressive, remaining in place while being observed and photographed from a distance of 1.5 m.
14 Jun 97	Two chicks (adult absent) approximately 20 cm TL; quiet, eyes open, alert but unalarmed, stayed in place; photographed at a distance of 1 m from inside enclosure.
20 Jun 97	Two chicks (adults absent) approximately 27 cm TL; active, alarmed (hissing), but remained in place while being photographed from a distance of 1 m.
13 Jul 97	One unfledged juvenile present, approximately 45 cm TL, hissing from rear of enclosure (no evidence of other juvenile); regurgitated food observed in front of unfledged juvenile (possible remains of other juvenile?); adult plumage (black wing primaries and mid-dorsal feathers) emerging through buff-orange down; areas of exposed and disturbed soil on enclosure floor; strong odor of ammonia; "whitewash" and adult wing feathers evident in and near enclosure; mid-portion of a snake skeleton found within 4 m of enclosure; juvenile photographed from inside enclosure at a distance of 1.5 m.
20 Jul 97	Adult observed in enclosure with single unfledged juvenile behind and partly beneath adult, neither bird hissing or acting aggressive; photographed inside enclosure from a distance of 1.5 m.
28 Jul 97	Charged by unfledged juvenile while crawling into enclosure; juvenile ran over top of observer's back and disappeared into a nearby rock hole; areas of "whitewash" evident under several ledges and at entrance to numerous subsidiary enclosures within 5 m of nest enclosure; no hissing or other sounds heard after juvenile disappeared.
10 Aug 97	Single unfledged juvenile with predominantly adult plumage (orange-buff down still conspicuous on breast and base of neck) observed outside and within 4 m of nest enclosure; juvenile ran quickly into a rock hole when approached; rock hole too small for juvenile to enter entirely, rear one-third of juvenile exposed and photographed; juvenile remained "frozen"and silent when briefly hand-stroked and gently pried.
21 Sep 97	No evidence of juvenile or adults at nest enclosure; several soaring Turkey Vultures approached within 12 m of enclosure and circled the area for several minutes; a possible roost site with copious "whitewash" within a prominent vertical fissure of the cliff was observed nearby in June 1997.

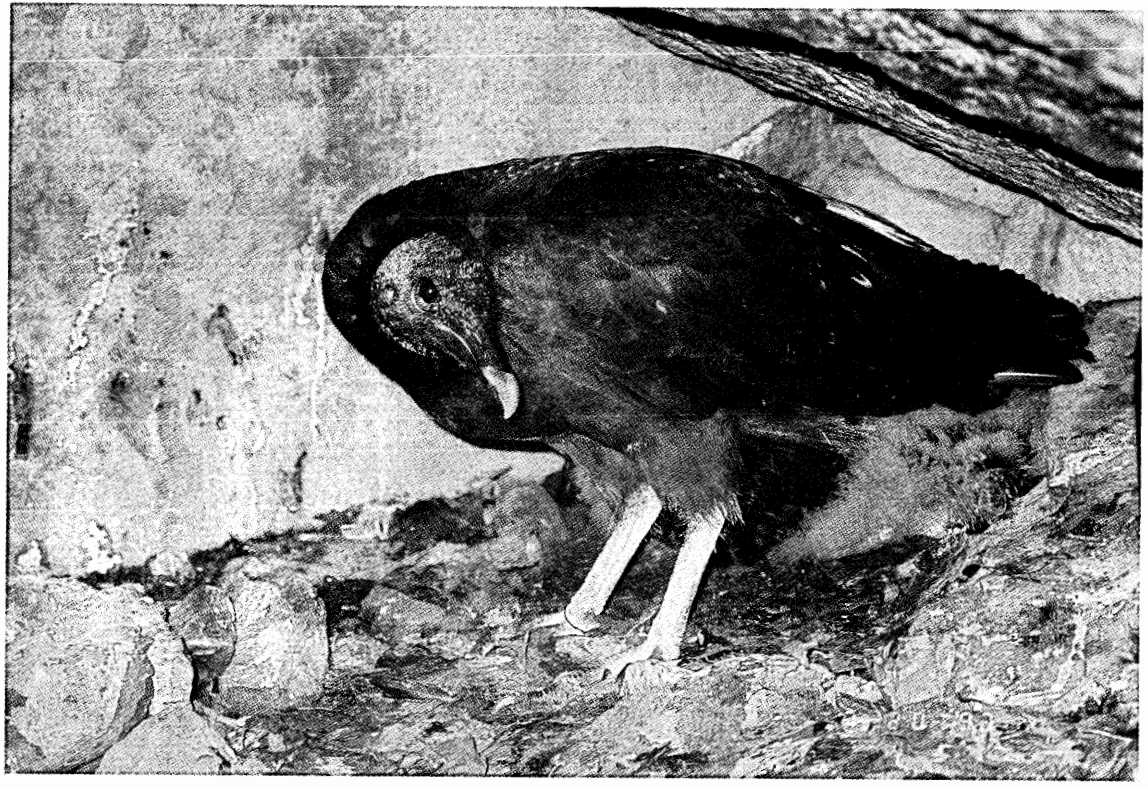


Photograph No. 1. Two Black Vulture chicks approximately 14 days old within rock enclosure. Photographed 14 June, 1997, by Joseph T. Bridges.

Photograph No. 2. Black vulture chicks approximately 20 days old photographed from within rock enclosure. Photographed 20 June, 1997, by Joseph T. Bridges.



Photograph No. 3. View Northeast toward rock enclosure. Arrows point to enclosure access locations. The base of a 30 m cliff is shown at upper right. Photographed 20 June, 1997, by Joseph T. Bridges.



Photograph No. 4. Black vulture adult within nest enclosure. A single unfledged juvenile, approximately 44 days old, is partly visible behind the adult. Photographed 20 July, 1997, by Joseph T. Bridges.

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