

**AN ASSESSMENT OF THE BALD EAGLE AND GREAT BLUE
HERON BREEDING POPULATIONS ALONG HIGH ROCK,
TUCKERTOWN, NARROWS, AND FALLS RESERVOIRS
IN CENTRAL NORTH CAROLINA: 2007 BREEDING SEASON**



A COOPERATIVE PROJECT BY:
ALCOA POWER GENERATING INC.
&
CENTER FOR CONSERVATION BIOLOGY
COLLEGE OF WILLIAM AND MARY

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Final Report

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Cover Photo: Bald Eagle nestling. Photo by Bryan Watts

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BACKGROUND

Context

Historically, the Bald Eagle was a common breeding species along major river systems, lakes and coastal areas throughout much of North America. The widespread use of persistent pesticides for crop management in the region resulted in dramatic declines over a 30-40 year period. By the late 1960s, most breeding populations had been decimated by eggshell thinning and associated low productivity. Concern for these populations prompted the elevation of the Bald Eagle to endangered status and led to a national effort to restore historic populations. Since the nationwide ban on many persistent pesticides in 1972, many populations have experienced gradual recoveries in both productivity and total numbers. The state of North Carolina has seen an increase from no breeding pairs in the late 1960s to approximately 60 pairs as of 2003.

Work conducted by The Center for Conservation Biology in 1995 and 1996 at Alcoa Power Generating Inc.'s (APGI) Yadkin Project (FERC #2197) identified areas of consistent use by eagles in inland areas of North Carolina and suggested that nesting activity should be anticipated in the Yadkin-Pee Dee River basin. A survey of this system in 2001 provided confirmation of these suggestions. Since that survey annual efforts to monitor this population have continued. Results of the 2007 survey follow (a summary of all eagle nesting activity since 2001 is provided at the end of this report).

Objectives

The objectives of the eagle survey on Yadkin Project reservoirs were 1) to document the status, distribution and productivity of nesting pairs in association with the Yadkin reservoirs and associated river corridors and 2) to increase our understanding of Bald Eagle natural history in interior regions of North Carolina. A third objective was to determine the status and distribution of breeding Great Blue Herons along the system of reservoirs.

METHODS

Waterways

Waterways covered by the Bald Eagle survey of 2007 included the four Yadkin Project reservoirs: 1) High Rock Reservoir, 2) Tuckertown Reservoir, 3) Narrows Reservoir, and 4) Falls Reservoir. The survey of High Rock Reservoir included the waterways between, and the mouth of, Grants Creek above I85 and the High Rock Reservoir Dam. The survey of Tuckertown Reservoir included waterways between the High Rock Reservoir Dam and the Tuckertown Dam. The survey of Narrows Reservoir included the waterways between Tuckertown Dam and Narrows Dam. The survey of Falls Reservoir included the waterway between Narrows Dam and Falls Dam.

Bald Eagle

Nest Survey - All major waterways and tributaries associated with the study system were surveyed for breeding Bald Eagles. A high-wing Cessna 172 aircraft was used to systematically overfly the land surface at an altitude of approximately 100 m to detect eagle nests. Flights were flown to systematically move between the shoreline and a distance of approximately 1 km to cover the most probable breeding locations for Bald Eagles. All nests detected were plotted on 7.5 min topographic maps and given a unique alpha-numeric code. Each nest was examined to determine its structural condition, the type and condition of nest tree, and the condition of the surrounding landscape. In addition to recording all nests detected, the area was searched for Bald Eagles. All eagles detected within the survey area were recorded. The survey was conducted on 27 March 2007.

Productivity Survey - All active Bald Eagle nests were rechecked to determine productivity. A Cessna 172 aircraft was used to fly low over nests to allow observers to examine nest contents. The number of eaglets present was recorded along with their approximate ages. Each nest was also examined to determine its structural condition. Observations of all Bald Eagles detected were recorded. The survey was conducted on 15 May 2007.

Great Blue Herons

All breeding colonies of Great Blue Herons detected during survey flights were mapped and recorded. Colony locations were plotted on 7.5 min topographic quadrangles. Colonies were examined for size, substrate use, and breeding stage. Colony size estimates were rounded off using a graded scale as follows. A total count was made for colonies < 20 pairs. Estimates for colonies > 20 pairs were rounded off using a graded scale: nearest 5 for < 50, nearest 10 for 50 – 200, nearest 25 for 200 – 450.

SURVEY FINDINGS

High Rock Reservoir

Bald Eagles

Two Bald Eagle territories were observed to be active on High Rock Reservoir during 2007 surveys. Both territories contained a single nest. Nest R0-04-01 located near Long Ferry Road has been active since 2004 and was the replacement for DA-01-01. DA-01-01 was blown out in the winter of 2005 and has not been repaired. The new territory including nest DA-07-01 is located on upper Abbott's Creek on the small island supporting Great Blue Heron colony GBH-11. The previous territory on High Rock Reservoir containing nest RO-02-01 discovered in 2002 along the south shoreline between Panther Point and Camp Sapona was not determined to be active in 2007. The single nest was blown out of the tree during the spring of 2002 and has not been rebuilt. No replacement nest has been located for that pair to date. The nest appeared to have been used in 2002 but no direct evidence of a breeding attempt was ever documented.

NEST: RO-04-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
RO-04-01	Rowan	Southmont	Y	Y	2

Nest Location

This nest is located along a creek feeding into a small embayment almost due east of the intersection of Goodman Lake Road and Long Ferry Road. The nest is on the west side of the reservoir and southwest of the previous nest DA-01-01. The nest tree is positioned on the outer edge of a streamside forest buffer adjacent to a young regenerating pine stand. The tree does not appear to be visible from the water.

Nesting Activity

Bird Activity – On 27 March, 2007 two adults were observed on the nest with 2 chicks approximately 15 days old. The nest was in good condition with a well-formed cup, fresh lining, and green pine boughs. On 15 May 2007 both chicks were still present on the nest with no adult attending.

Nest Condition – The nest structure was larger than when observed during the 2004 breeding season by approximately the same as observed in 2005 and 2006. On 27 March, 2007 the nest was in good structural condition, had a well-formed cup and fresh lining. The nest is of moderate size consistent with the age of the nest and the nest tree.

Nest Substrate

Substrate Type – Nest was built in a live loblolly pine tree. The tree was in a supercanopy position at the edge of a regenerating pine stand.

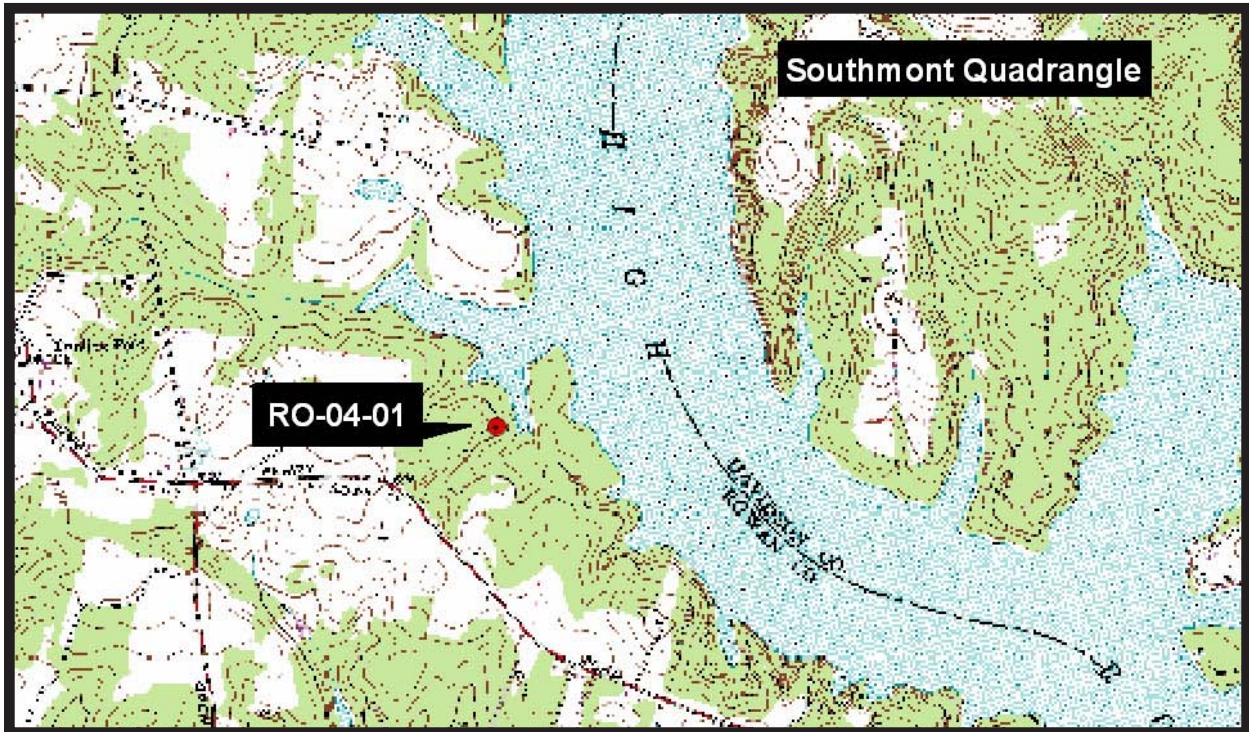
Nest Position – Nest is built in a stable, triple-prong top crotch. Nest has a moderate crown above but sky exposure is more than 50%.

Substrate Condition – Nest tree appears to be in good health with no significant crown damage.

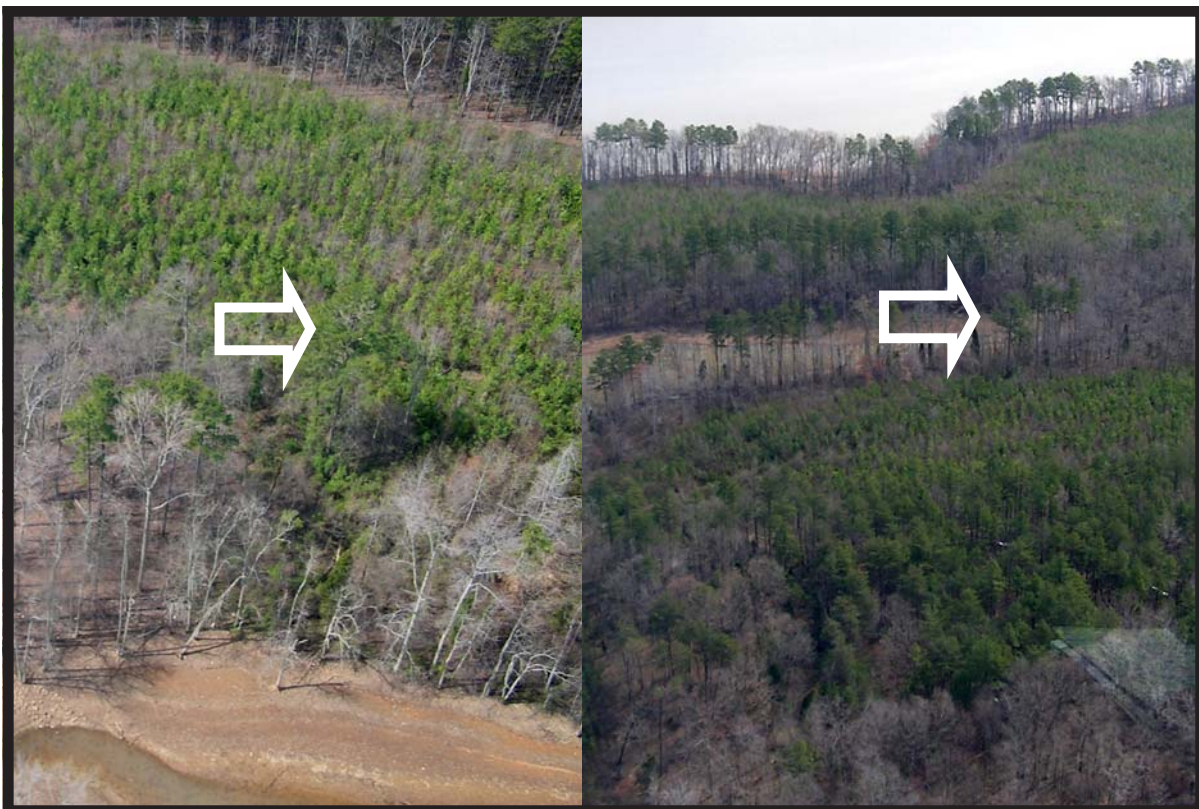
Potential Disturbance

Nest site appears to be protected by a visual buffer from the reservoir and is isolated across a regenerating stand from road access. Potential for disturbance is limited at this site.

Map location of Bald Eagle nest RO-04-01.



Aerial photos of nest RO-04-01 (photo 2006; B. Watts)



NEST: DA-07-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
DA-07-01	Davidson	Grist Mountrn	Y	Y	0

Nest Location

This nest is located on a small island on the upper reach of Abbotts Creek. The nest is positioned on the north end of the island just outside the boundary of Great Blue Heron colony GBH-11. This nest is visible from the water and likely visible from houses along the shoreline.

Nesting Activity

Bird Activity – On 27 March, 2007 an adult was observed on the nest in incubating posture. The second adult was not observed in the vicinity. The nest was in good condition with a well-formed cup and fresh lining. On 15 May 2007 the nest was empty with no attending adult suggesting that the nesting attempt failed. An adult was perched along the shoreline. It is common for first breeding attempts to fail.

Nest Condition – The nest structure was small and shallow. This is characteristic of a new nest. On 27 March, 2007 the nest was in good structural condition, had a well-formed cup and fresh lining. The nest tree is small with a relatively small crotch. This will limit nest expansion in future years if the pair continues to use this location.

Nest Substrate

Substrate Type – Nest was built in a small, spindly hardwood. The tree is on the lower limit of size for eagles and it is not likely that it will be used for any length of time. The upper portion of the tree appeared vulnerable to windthrow. The tree was along the midline of a narrow island and toward the north end. The tree was not elevated above the surrounding trees but of near equal height.

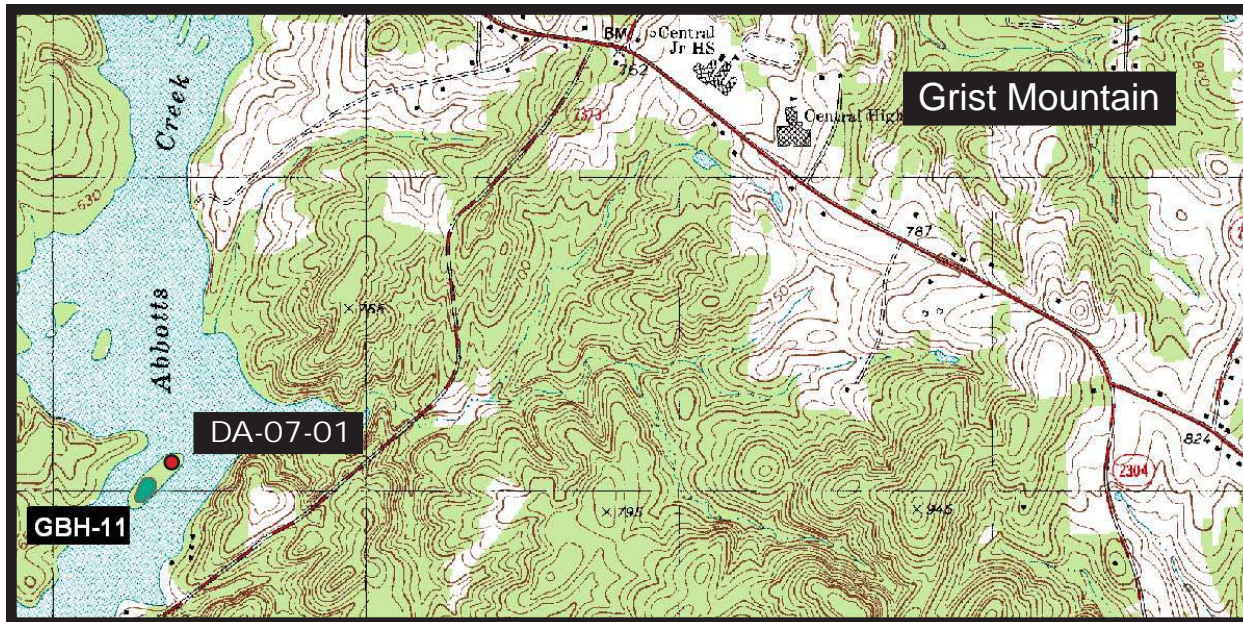
Nest Position – Nest was built in the top crotch of the tree. The crotch was small which will limit nest expansion. The nest was situated in a terminal position on the tree with sky exposure of 100%. Nest is built in a stable, triple-prong top crotch. Nest has a moderate crown above but sky exposure is more than 50%.

Substrate Condition – Nest tree appears to be in good health but has a limited crown.

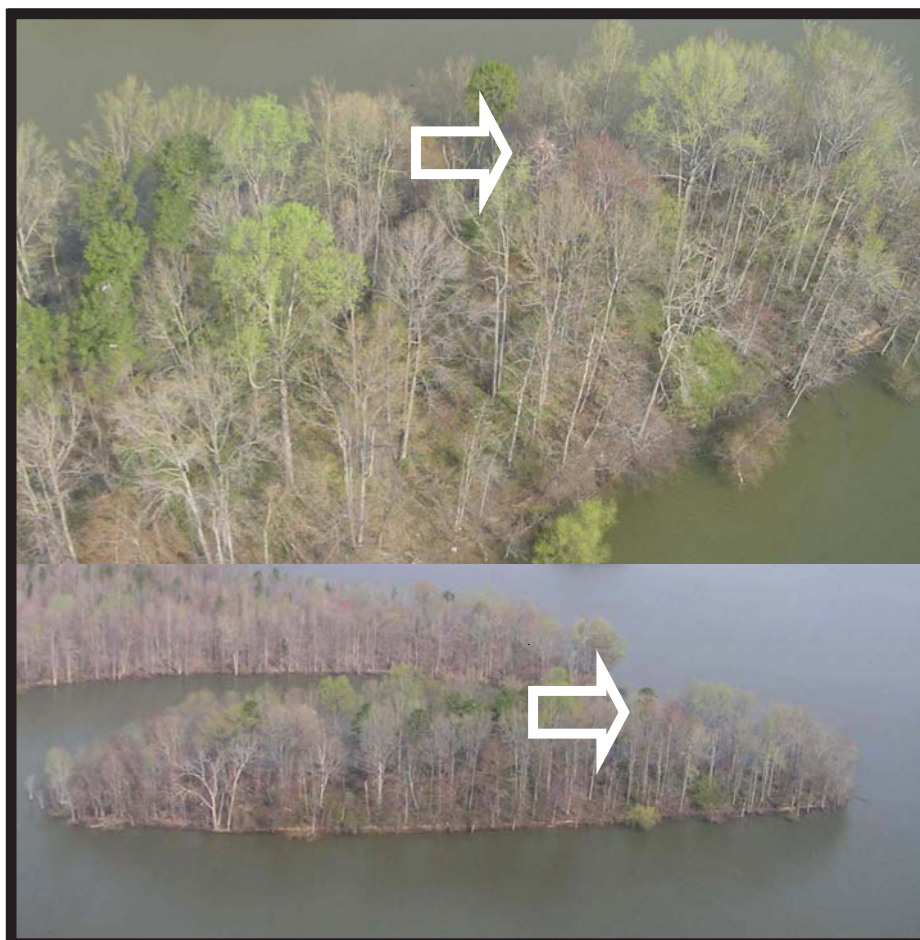
Potential Disturbance

Potential for disturbance is limited at this site due to isolation from the mainland. The nest is visible from the water and likely from houses along the shoreline.

Map location of Bald Eagle nest DA-07-01.



Aerial photos of nest DA-07-01 (photo 2007; B. Watts)



Great Blue Herons/Great Egrets

Seven breeding colonies of Great Blue Herons were detected on High Rock Reservoir. All but 2 of these colonies were located on small, forested islands isolated from the shoreline. Colony size ranged from 8 to 340 pairs. Total population estimate for this reservoir was 577 breeding pairs. For the fourth year in a row, Great Egrets were found nesting on the reservoir. Pairs were mixed in with the largest colony of Great Blue Herons on the settling pond north of the intersection of Leonard Road and Long Ferry Road. One pair was also mixed in with the Great Blue Herons on the island at the mouth of Abbotts Creek. Total population estimate for Great Egrets was 27 breeding pairs.

GBH-01

Code	County	Topo Quad	Pairs
GBH-01	Davidson	Southmont	54 GBHE, 1 GREG

Description

This colony was located on a small island near the Route 8 bridge in the mouth of Abbotts Creek. The island supports a mixed stand of loblolly pines and hardwoods. Nests were built in both pines and hardwoods. On 27 March, 2007 54 pairs of Great Blue Herons were counted with 90% incubating and the remainder building. One pair of Great Egrets was building a nest. There had been no increase in the number of Great Egret pairs in the colony by 15 May, 2007.

Map location of Great Blue Heron colony GBH-01



Aerial view of Great Blue Heron colony GBH-01 (Photo 2006; B. Watts).



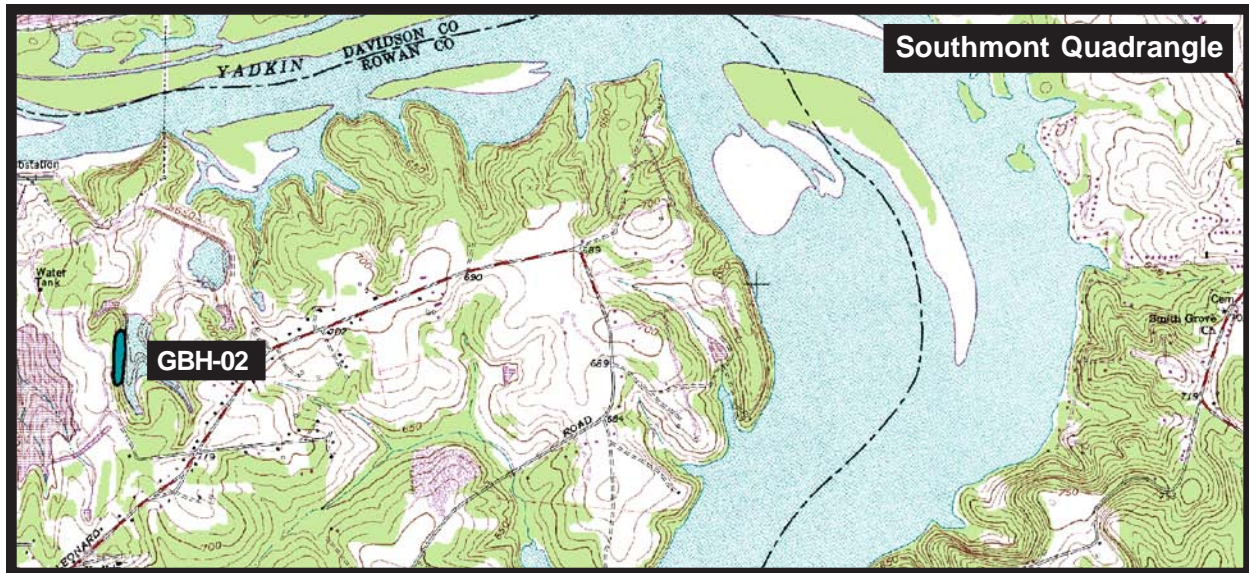
GBH-02

Code	County	Topo Quad	Pairs
GBH-02	Rowan	Southmont	340 GBHE, 26 GREG

Description

This colony was located along the western edge of one of Duke Power's settling ponds just north of the intersection of Leonard Road and Long Ferry Road. The pond was lined with a mixed stand of hardwoods and pines. A larger stand of pure loblollies was positioned further from the pond edge. Nests were built along the pond margin in both hardwoods and pines and throughout the pure pine stand. Nest distribution continued to be more restricted as in 2003 due to partial harvest of pine stand in 2002. On 27 March 2007 90% of Great Blue Herons were incubating and the remaining 10% were building nests. Great Egrets were nesting in the core of the subcolony occupying the pure pine stand. On 27 March 2007 23 pairs were incubating and 3 pairs were building nests. No change in Great Egrets had occurred before 15 May, 2007.

Map location of Great Blue Heron Colony GBH-02



Aerial view of the western portion of Great Blue Heron colony GBH-02 (Photo 2006; B. Watts)

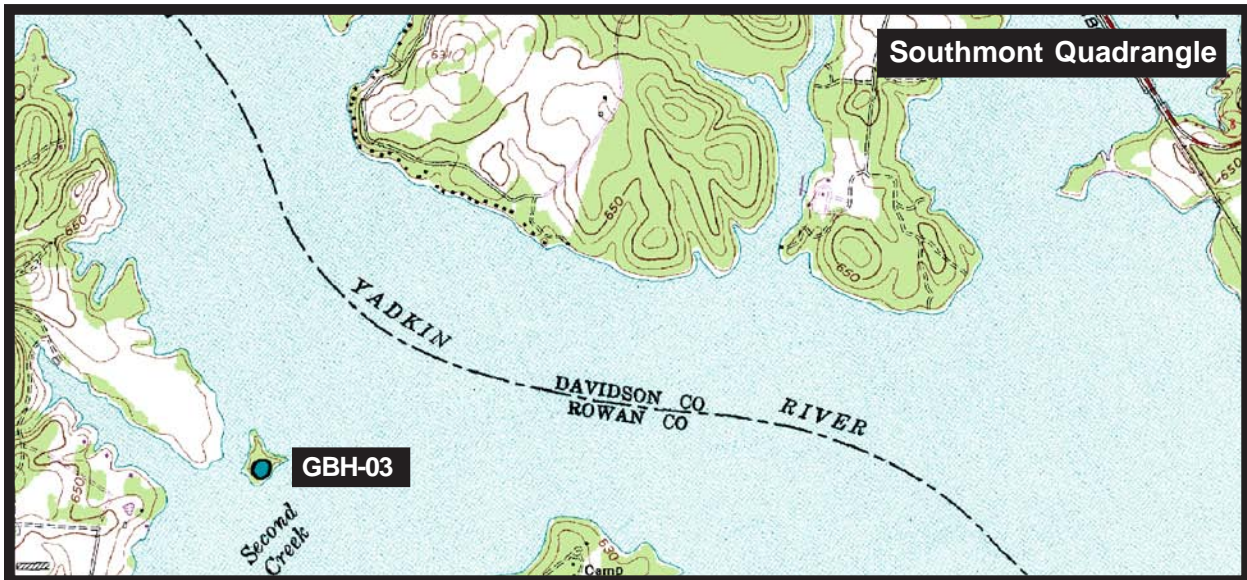


GBH-03

Code	County	Topo Quad	Pairs
GBH-03	Rowan	Southmont	73

Description

This colony was located on a small, forested island in the mouth of Second Creek. The island was forested with a middle-aged loblolly pine stand. This colony changed from 21 nests in 2002 to 38 nests in 2003 to 33 nests in 2004 to 52 nests in 2005 to 55 nests in 2006 and 73 in 2007. On 27 March, 2007 90% of pairs were incubating and 10% were building nests.

Map location of Great Blue Heron colony GBH-03

Aerial view of Great Blue Heron colony GBH-03 (Photo 2006; B. Watts)



Aerial view of Great Blue Heron colony GBH-03 (Photo 2006; B. Watts)



GBH-06

Code	County	Topo Quad	Pairs
GBH-06	Rowan	Southmont	68

Description

This colony is located on a small forested island within Swearing Creek just above the Linwood Southmont Road bridge. The island is forested with a middle-aged pine stand. On 27 March 2007 there were 68 nesting pairs present compared to 52 pairs in 2005 and 73 pairs in 2006. An estimated 90% were incubating and 10% were building nests.

Map location of Great Blue Heron colony GBH-06



Aerial view of Great Blue Heron colony GBH-06 (Photo 2006; B. Watts)



GBH-07

Code	County	Topo Quad	Pairs
GBH-07	Rowan	Grist Mountain	24

Description

This colony was located on a small forested island within Abbotts Creek off shore of a small development at the end of Route 2373. The island was forested with a mix of pine and hardwood. On 27 March 2007 there were 24 pairs nesting on the island. An estimated 80% of pairs were incubating and 20% were building.

Map location of Great Blue Heron colony GBH-07

Aerial view of Great Blue Heron colony GBH-07 (Photo 2006; B. Watts)



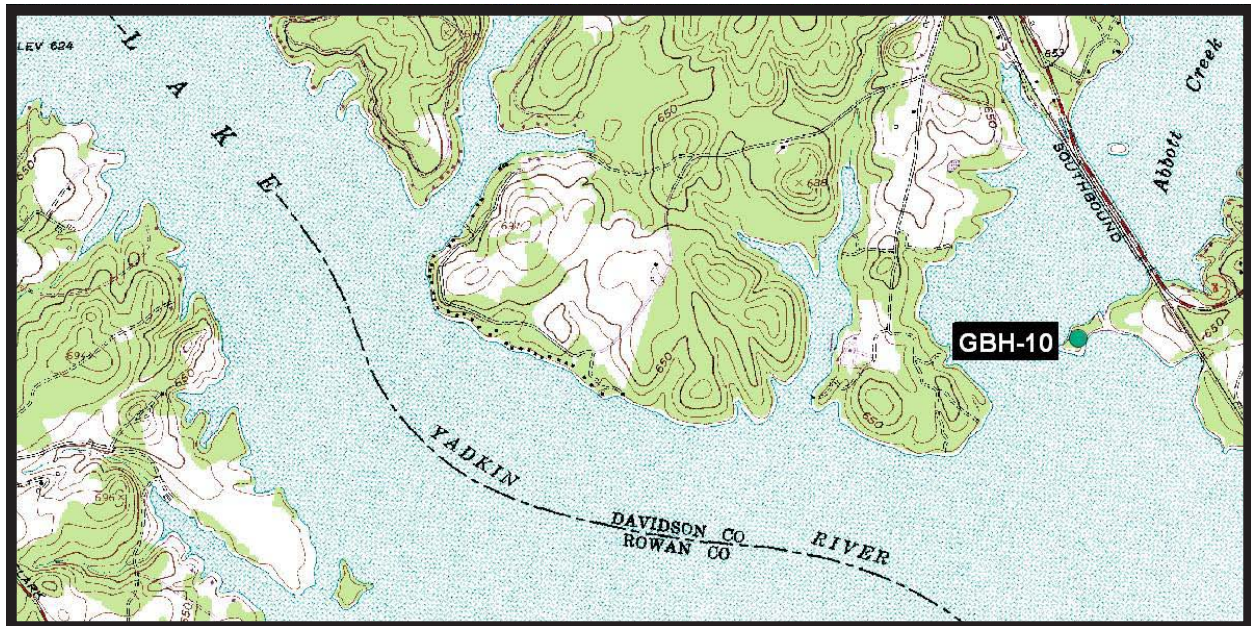
GBH-10

Code	County	Topo Quad	Pairs
GBH-10	Davidson	Southmont	10

Description

This colony was located on a small forested peninsula that forms the southeastern mouth of Abbotts Creek . The site was forested with a mix of pine and hardwood. On 27 March 2007 there were 10 pairs nesting on the peninsula. Eight of these pairs were incubating and 2 were building nests.

Map location of Great Blue Heron colony GBH-10.



Aerial view of Great Blue Heron colony GBH-10 (Photo 2006; B. Watts)



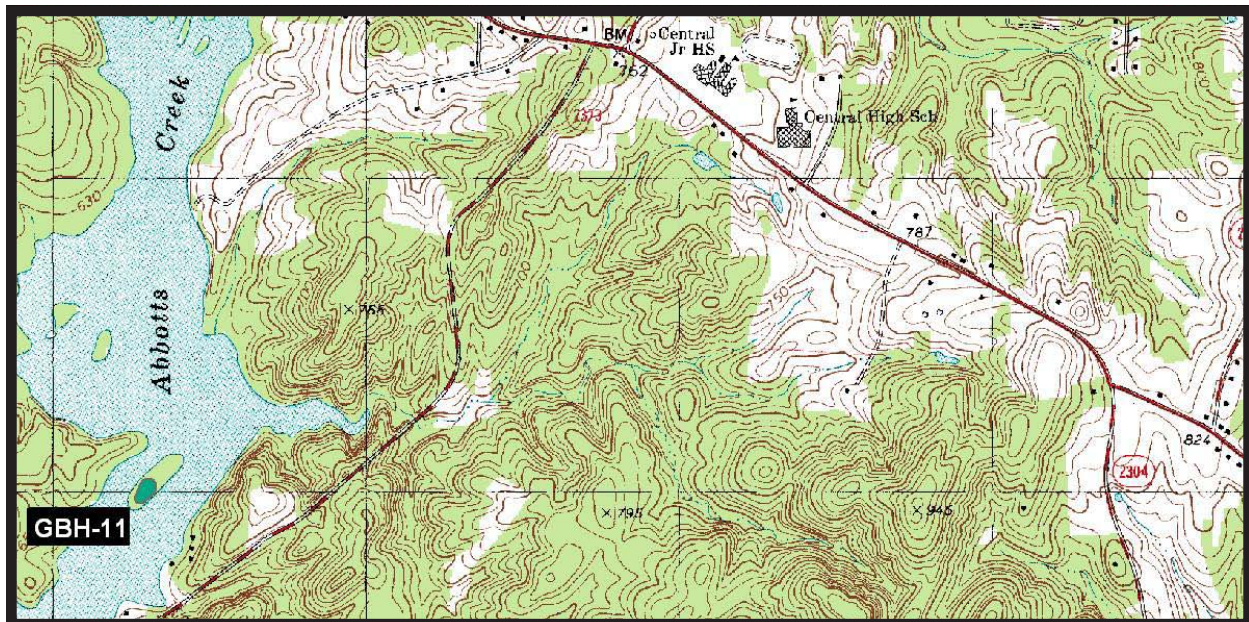
GBH-11

Code	County	Topo Quad	Pairs
GBH-11	Davidson	Grist Mountain	8

Description

This colony was located on a small forested island in Abbotts Creek . The site was forested with a mix of pine and hardwood. On 27 March 2007 there were 8 pairs nesting on the island. Six pairs were incubating and 2 were building.

Map location of Great Blue Heron colony GBH-11.



Aerial view of Great Blue Heron colony GBH-11 (Photo 2006; B. Watts)



Tuckertown Reservoir

Bald Eagles

A single Bald Eagle nest was observed within the Tuckertown Reservoir system for the sixth year. The nest was located within the upper section just downstream of the High Rock Dam.

NEST: RO-02-02

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
RO-02-02	Rowan	High Rock	Y	Y	3

Nest Location

This nest was located along the south shoreline just down from Cedar Creek. The nest tree is isolated within a recently clearcut area of private land above a farm. The tree is set back from the shoreline with a buffer strip of trees between the nest tree and the shoreline. The nest is not likely visible from the water due to tree buffer. The nest is likely visible from route 2152.

Nesting Activity

Bird Activity – On 27 March, 2007 a single adult was standing on the nest with 3 chicks approximately 14 days old. On 15 May 2007 all 3 chicks were fully feathered and standing on limbs above the nest. No adult was present.

Nest Condition – Nest structure was of moderate size and appeared to be the same size as when observed over the past few years. On 27 March, 2007 the nest was in good condition with a well-formed cup and complete lining.

Nest Substrate

Substrate Type – Nest was built in an isolated loblolly pine. Nest tree was a specimen loblolly in an ideal condition to be used for a nest tree.

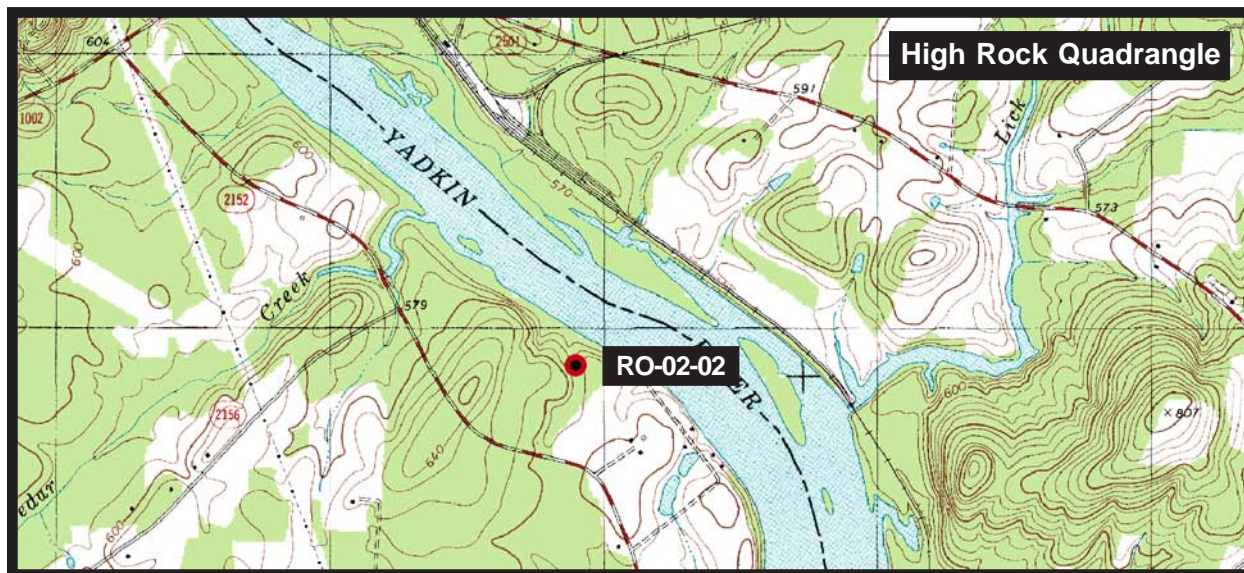
Nest Position – Nest was positioned in a top crotch deep below the crown. This configuration is the most common and apparently most stable position for eagle nests. Nest was under large crown with less than 20% sky exposure.

Substrate Condition – Nest tree appeared to be in good condition with no evidence of crown damage.

Potential Disturbance

Nest tree is in a fairly remote location with a considerable buffer on upland side and tree buffer on water side. Disturbance potential appears to be limited.

Map location of Bald Eagle nest RO-02-02



Aerial view of location of Bald Eagle nest RO-02-02 (Photo 2007: B. Watts)



Great Blue Herons

A single colony of breeding Great Blue Herons was detected on Tuckertown Reservoir on an island just below the High Rock Dam. Total population estimate for this reservoir is 95 pairs.

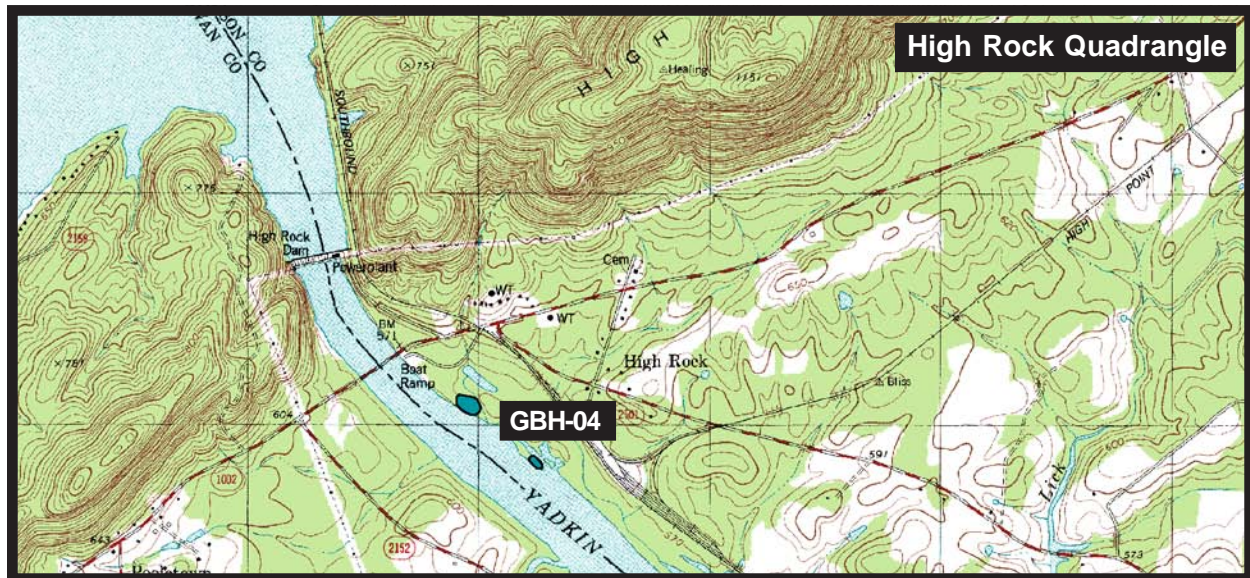
GBH-04

Code	County	Topo Quad	Pairs
GBH-04	Davidson	High Rock	95

Description

This colony was located on a small forested island and the adjacent forested shoreline just below the High Rock Dam. This island is long and linear and contains a mixed stand of hardwoods and pines. The adjacent shoreline is pine-dominated. There were 2 sub-colonies within this location. The larger sub-colony contained 75 pairs and was within the pines along the shoreline. The second sub-colony was on the island and contained 20 pairs. On 27 March 2007 approximately 90% of pairs were incubating and 10% were building nests.

Map location of Great Blue Heron colony GBH-04



Aerial view of location of Great Blue heron colony GBH-04 (Photo 2006: B. Watts)



Narrows Reservoir

Bald Eagles

Two Bald Eagle nests were located along the shoreline of Narrows Reservoir. The older nest (ST-01-01) located along the edge of a canal behind Graveyard Island from 2001-2004 was absent. The newer nest (MO-03-01) located across the river on Uwharrie National Forest was present and active. The new nest (MO-06-01) produced last year close to MO-03-01 was present but not used.

MO-03-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
MO-03-01	Montgomery	Badin	Y	Y	2

Nest Location

This nest was located along a bluff set back from the shoreline on Uwharrie National Forest. The nest tree is within a scattered stand of supercanopy trees. The nest does not appear to be visible from the water along the shoreline but may be visible from logging road 6558.

Nesting Activity

Bird Activity – On 27 March, 2007 one adult was detected on the nest with 2 chicks approximately 45 days old. On 15 May, 2007 the nest was empty and the chicks were presumed to have fledged.

Nest Condition – Nest structure is of moderate size and similar in appearance to 2005 and 2006. On 27 March, 2007 the nest was in good structural condition, had a well-formed cup and fresh lining. The nest showed clear signs of recent work.

Nest Substrate

Substrate Type – The nest was built in a live loblolly pine.

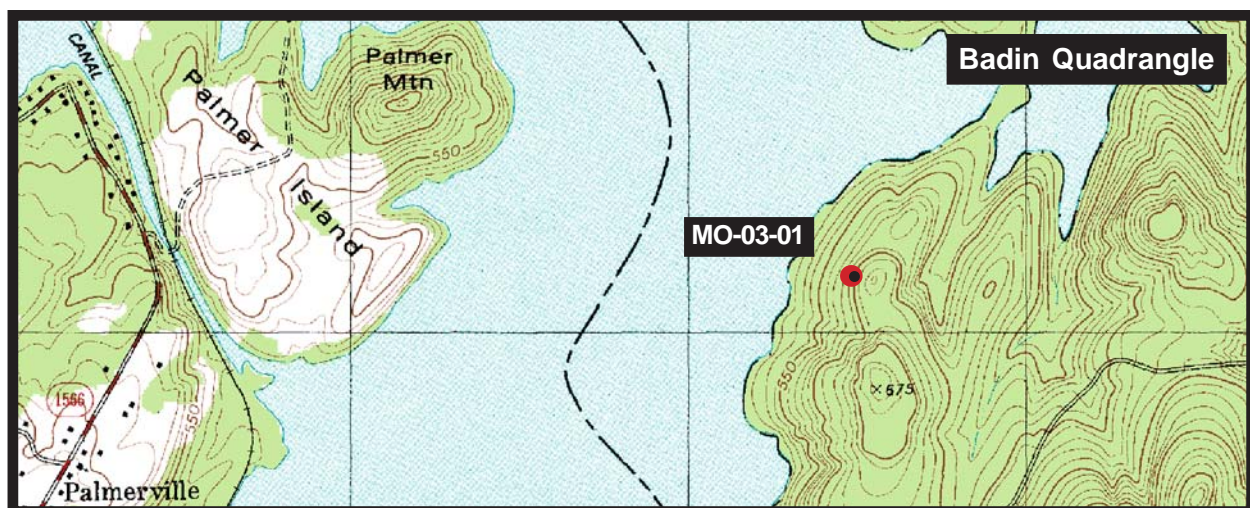
Nest Position – Nest is positioned on a lateral limb up against the trunk. Crown limbs are fairly sparse such that sky exposure was 70%.

Substrate Condition – Nest tree appeared to be in relatively good condition.

Potential Disturbance

Nest tree was protected by a visual buffer of scattered trees. It does not appear to be visible from shoreline but may be seen and accessed from nearby logging road.

Map location of Bald Eagle nest MO-03-01.



Aerial photo showing location of Bald Eagle nests MO-03-01 (l) and MO-06-01 (r). (Photos 2006: B. Watts)



MO-06-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
MO-06-01	Montgomery	Badin	Y	N	-----

Nest Location

This nest was located along a bluff set back from the shoreline on Uwharrie National Forest. The nest tree is within a scattered stand of supercanopy trees. The nest does not appear to be visible from the water along the shoreline but may be visible from logging road 6558.

Nesting Activity

Bird Activity – During the 2007 breeding season the active nest within this territory was MO-03-01. On 27 March, 2007 birds were present within the territory but not associated with MO-06-01.

Nest Condition – Nest structure is of moderate size and was in good structural condition when examined on 27 March, 2007. However, the nest surface had not been reworked during the winter months.

Nest Substrate

Substrate Type – The nest was built in a live loblolly pine.

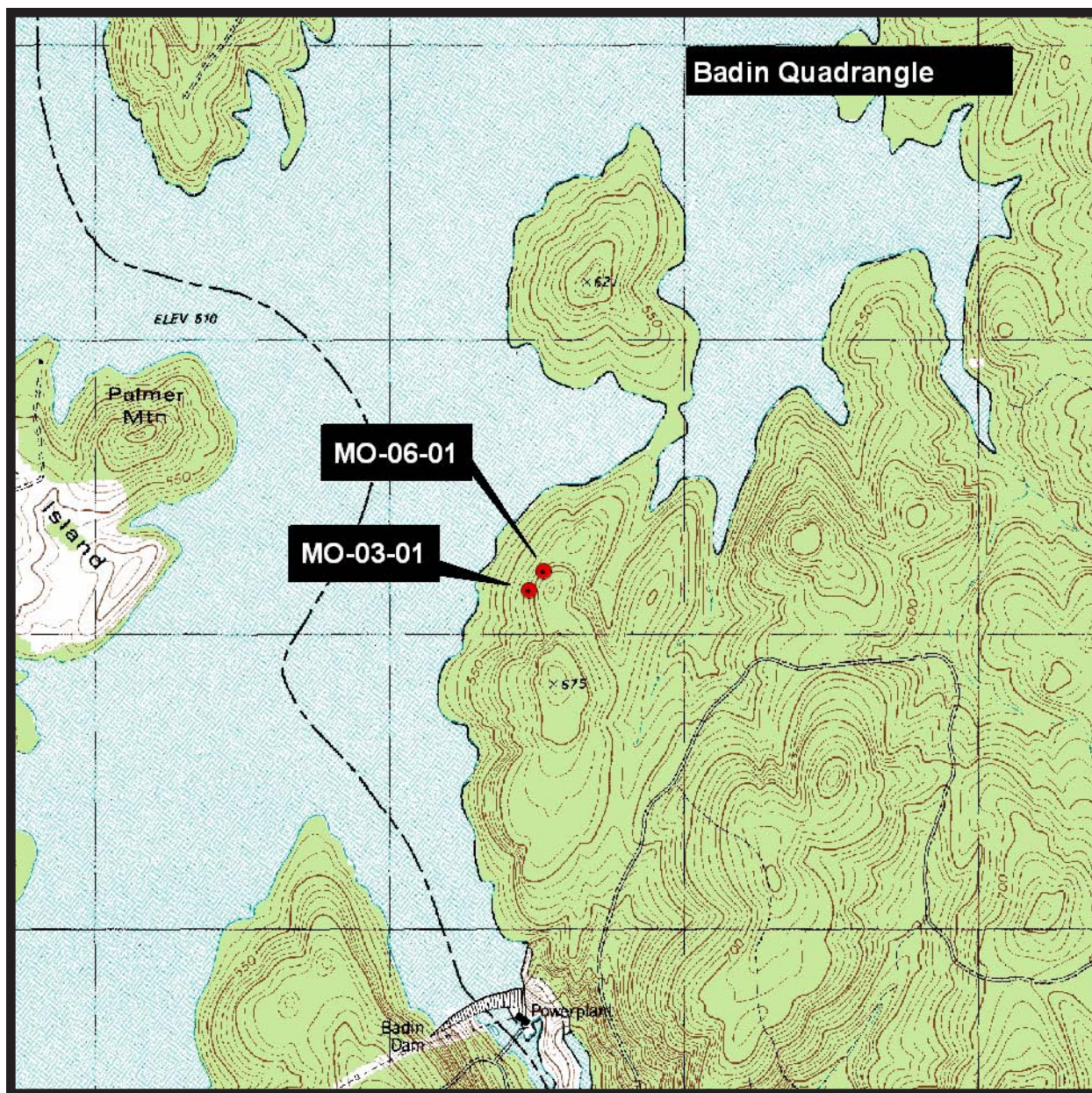
Nest Position – Nest is positioned within a terminal top crotch under a broad crown. The nest is positioned under a dense crown such that sky exposure is only about 20%..

Substrate Condition – Nest tree appeared to be in very good condition.

Potential Disturbance

Nest tree was protected by a visual buffer of scattered trees. It does not appear to be visible from shoreline but may be seen and accessed from nearby logging road.

Map location of Bald Eagle nest MO-03-01 and MO-06-01.



Great Blue Herons

Two colonies of breeding Great Blue Herons were detected within Narrows Reservoir during 2007. One colony was on an island at the confluence of Beaverdam and Reynolds Creeks and the second was on an island between Graveyard Island and Palmer Island. Total population estimate for this reservoir was 238 pairs.

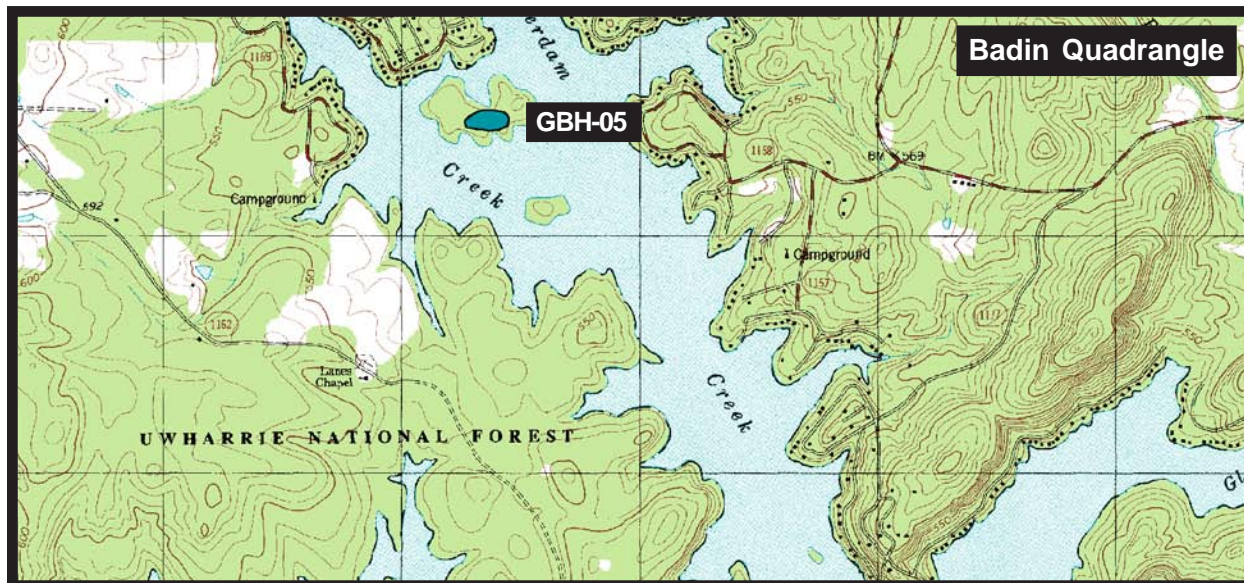
GBH-05

Code	County	Topo Quad	Pairs
GBH-05	Montgomery	Badin	180

Description

This colony was located on a small forested island near the Pine Haven residential development at the confluence of Beaverdam and Reynolds Creeks. The drainage is highly developed in this area with considerable boat traffic. The island supports a middle-age stand of loblolly pines that has numerous canopy gaps. Nests were built throughout the stand. The colony was estimated to contain 180 pairs compared to 145 pairs in 2006 and 180, 140, 185, and 110 pairs in 2002, 2003, 2004 and 2005 respectively. An increasing number of pine trees within the stand are now dead. On 27 March, 2007 approximately 95% of pairs were incubating and the remaining pairs were building.

Map location of Great Blue Heron colony GBH-05



Aerial views of Great Blue Heron colony GBH-05 (Photos 2006: B. Watts)



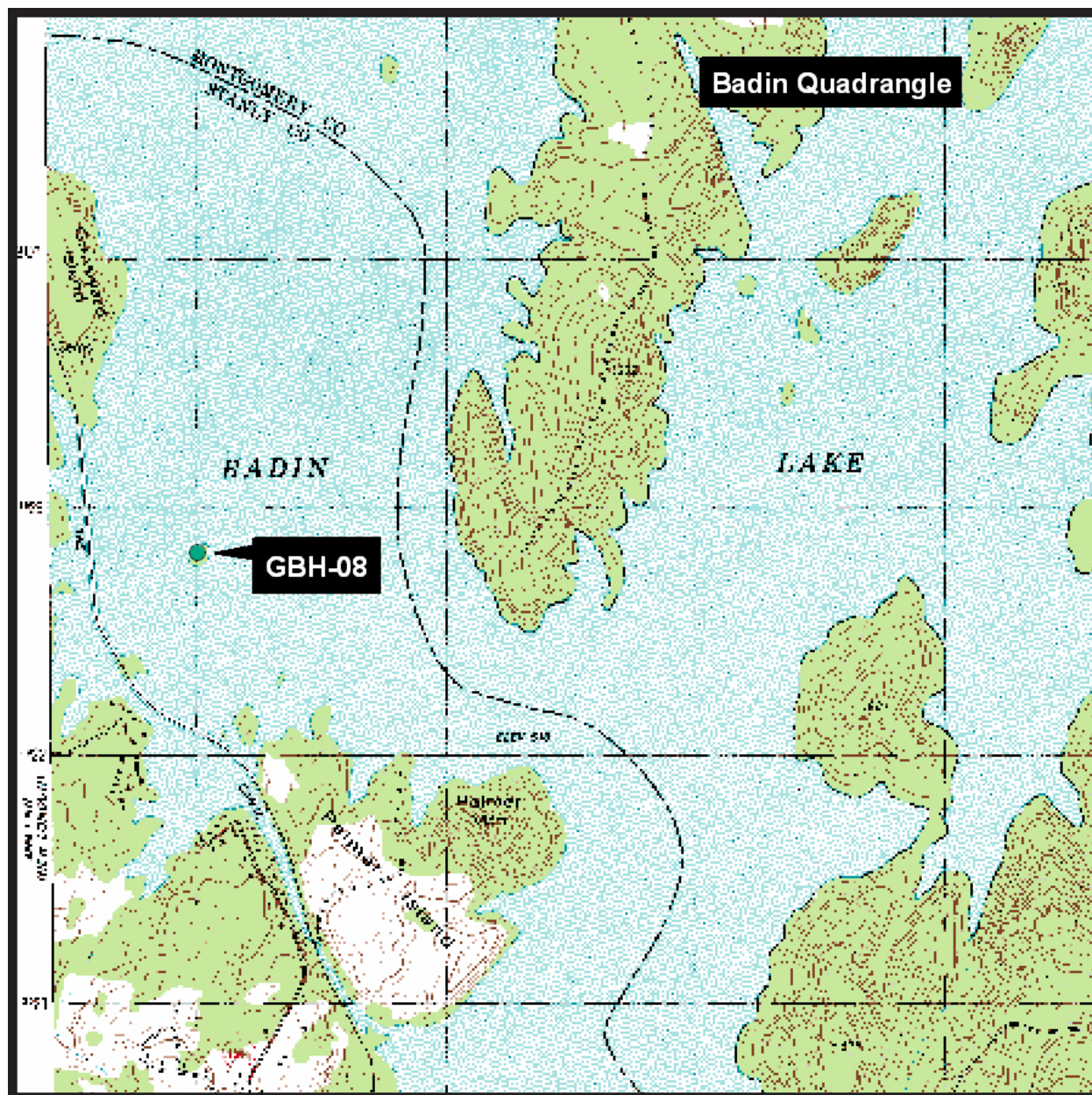
GBH-08

Code	County	Topo Quad	Pairs
GBH-08	Stanly	Badin	58

Description

This colony was located on a small forested island along the western shoreline of Badin Lake between Graveyard Island and Palmer Island. The island is well isolated from shoreline but subject to regular boat traffic. Nests were scattered in loblolly pines throughout the center of the island. On 27 March 2007 95% of pairs were incubating and remaining were building.

Map location of Great Blue Heron colony GBH-08.



Aerial views of Great Blue Heron colony GBH-08 (Photos 2006: B. Watts)



Falls Reservoir

Bald Eagles

A single Bald Eagle nest was present along this waterway during 2007. The nest was located along an unnamed stream southeast of Badin and between routes 1704 and 1719. The nest is in close proximity to ST-01-02 and may represent a replacement of that nest. Activity has been expected in this location since the discovery of ST-01-02. The two dams in close proximity would likely provide good foraging opportunities. Due to the small size of this waterway, it is unlikely that more than one eagle pair could be accommodated.

NEST: ST-07-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
ST-07-01	Stanly	Badin	Y	Y	2

Nest Location

The Bald Eagle nest within Falls Reservoir was located southeast of the community of Badin along an unnamed stream between routes 1704 and 1719. The nest was located within a stand of older oaks along a ravine. The nest has an extensive forest buffer on all sides and is not likely visible from any access points.

Nesting Activity

Bird Activity – This nest appears to be new. On 27 March, 2007 a single adult was incubating and the second adult was not observed. On 15 May, 2007 a single adult was attending 2 chicks that were approximately 25 days old.

Nest Condition – On 27 March, 2007 this nest was in good structural condition with a well-formed cup and a fresh lining. The nest was of moderate size consistent with a first-year nest.

Nest Substrate

Substrate Type – The nest was built in a live white oak tree. The tree was one of many older oaks in the forest stand. The tree was not supercanopy over the remaining stand but was even with other trees.

Nest Position – The nest was built in a deep crotch in a very low position under the tree crown. The extremely low position coupled with leaf out in May made the nest extremely difficult to see into during the second flight. Several passes were made in an attempt to view the nest surface.

Substrate Condition – The nest tree was in good condition.

Potential Disturbance

Nest tree was protected by a visual and structural buffer on all sides. Location is fairly remote and access is somewhat difficult from nearby roadway. Disturbance potential appears to be very limited.

Map location of Bald Eagle nest ST-07-01



Aerial view of location of Bald Eagle nest ST-07-01 (Photo 2007: B. Watts)

