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An assessment of the Bald Eagle and Great Blue Heron breeding populations along High Rock, Tuckertown, Narrows, and Falls Reservoirs in Central North Carolina: 2002 breeding season

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**AN ASSESSMENT OF THE BALD EAGLE AND GREAT BLUE
HERON BREEDING POPULATIONS ALONG HIGH ROCK,
TUCKERTOWN, NARROWS, AND FALLS RESERVOIRS
IN CENTRAL NORTH CAROLINA: 2002 BREEDING SEASON**



A COOPERATIVE PROJECT BY:

**ALCOA POWER GENERATING INC.
&
CENTER FOR CONSERVATION BIOLOGY
COLLEGE OF WILLIAM AND MARY**

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Draft Project Report

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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 1960's, 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 1960's to approximately 34 pairs as of 2000. With recent increases in Bald Eagle populations, contemporary surveys are necessary to track breeding and successful reproduction.

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.

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 2002 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 23 April 2002.

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 6 June 2002.

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 located along High Rock Reservoir during the 2002 breeding season. This includes one territory that was occupied in 2001 and a new territory that formed during the winter months. The first nest (DA-01-01) is located on a bluff between the mouths of North Potts Creek and Swearing Creek. This nest was determined to be active and productive in both 2001 and 2002. The second nest is located within a cleared area along the south shoreline between Panther Point and Camp Sapona. This nest was newly built and appeared to have been used but no direct evidence of a breeding attempt was documented. Establishment of this territory confirms previous suggestions concerning the likelihood of additional pairs establishing within the blocks of land near the dam.

NEST: DA-01-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
DA-01-01	Davidson	Southmont	Y	Y	2

Nest Location

This nest is located along the north shoreline almost due east of Trading Ford. The nest tree is positioned on a bluff above the reservoir in a live white oak tree. The nest tree is recessed within the tree cluster such that it is difficult to observe the nest except from directly above. Nest is likely visible from the water within the adjacent cove.

Nesting Activity

Bird Activity – On 23 April 2002 an adult was observed perched on a limb of an adjacent tree. Two chicks were standing on the nest and fully feathered. Based on pattern of feather development, chicks were estimated to be approximately 40 days old. On 6 June, 2002 both chicks were perched on limbs above the nest. No adults were observed attending nest.

Nest Condition – Nest structure is of moderate size. On 23 April, 2002 nest was observed to have a deep cup that was well lined. Nest structure was in very similar condition as observed in 2001. In contrast to other nests within the drainage system, no damage was sustained during heavy winds throughout April and May.

Nest Substrate

Substrate Type – Nest was built in a live white oak tree.

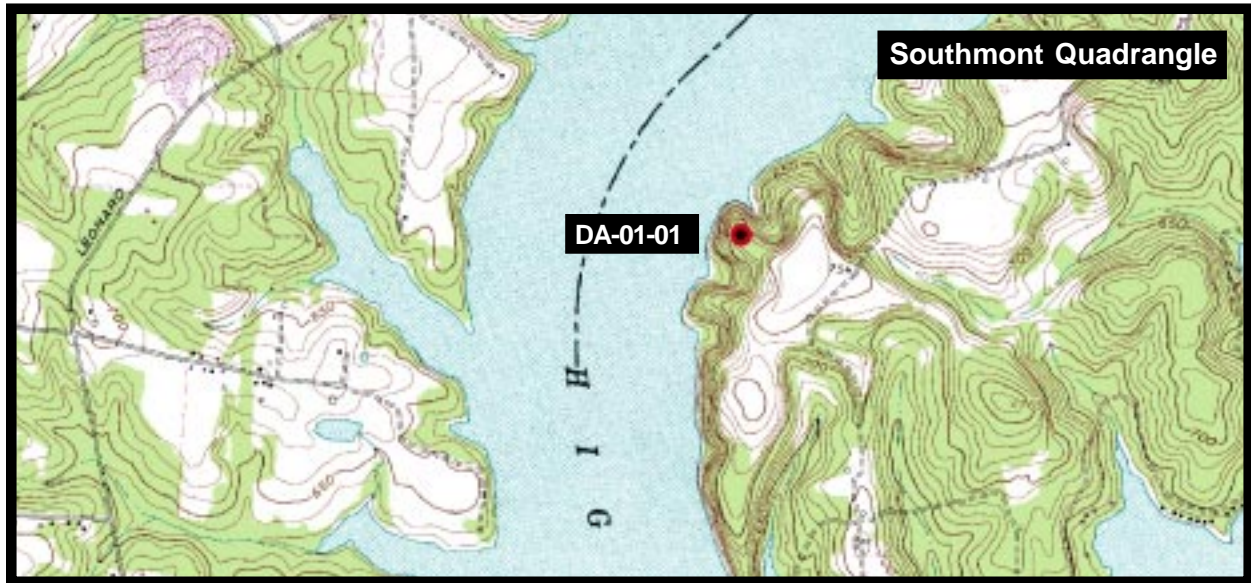
Nest Position – Nest is positioned in a deep stable crotch. Nest tree is on a knoll and in a supercanopy position above surrounding trees. Nest has large deciduous crown above such that sky exposure is <20%.

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

Potential Disturbance

Nest is easily visible before leaf out. However, after leaves emerge, nest has a good visual buffer on all sides. Nest tree is set back from shoreline such that disturbance from water should not be significant. Nest tree is in a fairly remote location with a considerable buffer on upland side. Disturbance potential appears to be limited.

Map location of Bald Eagle nest DA-01-01



Aerial view of Bald Eagle nest DA-01-01



NEST: RO-02-01

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
RO-02-01	Rowan	Gold Hill	Y	N	-----

Nest Location

This nest was located along the south shoreline on the peninsula just east of Camp Sapona. The nest tree is isolated within an area recently harvested. 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 does not appear to be visible from any public roads from the upland side.

Nesting Activity

Bird Activity – On 23 April 2002 an adult was observed perched in a loblolly pine tree along the shoreline and within 100 m of the nest. The nest was in good condition with a complete lining. There was whitewash visible on the limbs around the nest. The nest appeared to have been used early in the season but no eggs or young were present. On 6 June 2002 the nest was no longer in the tree and no birds were detected. The nest had likely been blown out during heavy winds in April or May.

Nest Condition – Nest structure was of moderate size. On 23 April 2002 nest was shallow but well lined. Shallow nests are typical of first-year nests. On 6 June 2002 no remnant of the nest remained.

Nest Substrate

Substrate Type – Nest was built in an isolated loblolly pine.

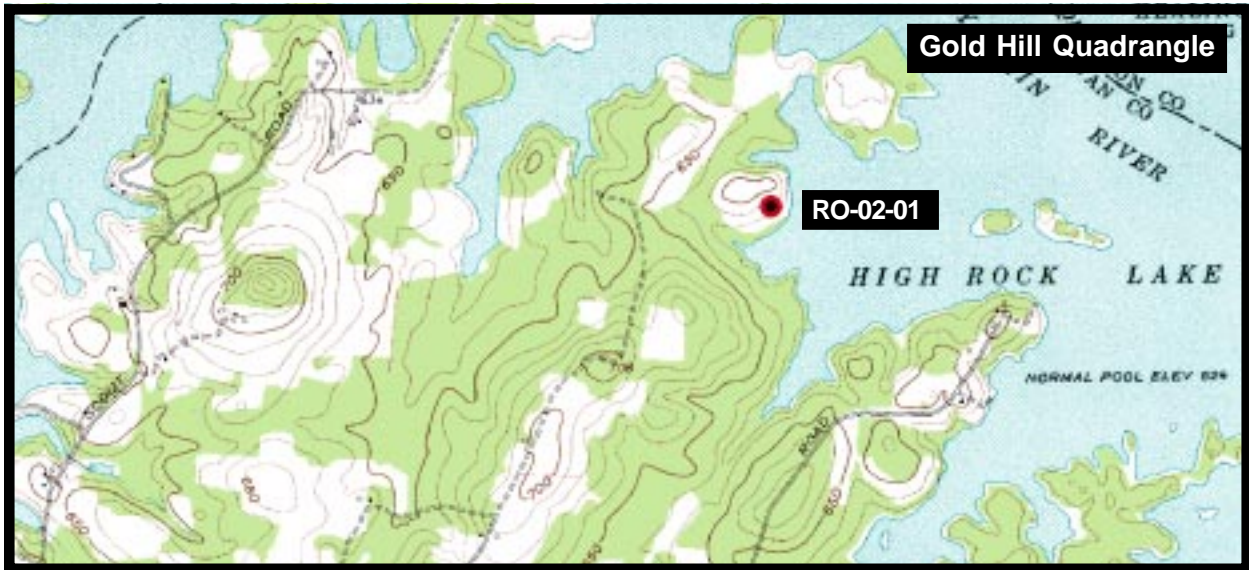
Nest Position – Nest was positioned in the very top of the tree crown. The nest was typical of a “surface nest” in that it was wide but shallow and had a saucer shape. These nests are often unstable and are frequently blown out during high winds. None of the crown was over the nest such that sky exposure was 100%.

Substrate Condition – Nest tree appeared to be in good condition with no evidence of crown damage. However, the tree was recently isolated by the harvest of surrounding trees making it more vulnerable to windthrow.

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-02-01



Aerial view of Bald Eagle nest RO-02-01



Great Blue Herons

Five breeding colonies of Great Blue Herons were detected on High Rock Reservoir. All but 1 of these colonies were located on small, forested islands isolated from the shoreline. Two of these colonies were not present during the breeding season of 2001: GBH-06 and GBH-07. Total population estimate for this reservoir was 528 breeding pairs. This represents a 21% increase over 2001.

GBH-01

Code	County	Topo Quad	Pairs
GBH-01	Davidson	Southmont	21

Description

This colony was located on a small island near the Route 8 bridge in the mouth of Abbotts Creek. The island had a mixed stand of loblolly pines and hardwoods. Nests were built in a small cluster of pines only. Twenty-one nests were counted. All nests had chicks on 23 April 2002.

Map location of Great Blue Heron colony GBH-01



Aerial view of Great Blue Heron colony GBH-01



GBH-02

Code	County	Topo Quad	Pairs
GBH-02	Rowan	Southmont	480

Description

This colony was located along the western edge of a small pond just north of the town of Trading Ford. 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. Nests were more widely distributed in 2002 compared to 2001. Many nests were constructed on the southern end of the pond such that all forested edges of the pond were occupied by the colony. On 23 April 2002 the majority of nests contained chicks.

Map location of Great Blue Heron Colony GBH-02



Aerial view of Great Blue Heron colony GBH-02



GBH-03

Code	County	Topo Quad	Pairs
GBH-03	Rowan	Southmont	21

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. All nests were built in pine trees. On 23 April 2002 there were 21 nests within the colony and all pairs had chicks.

Map location of Great Blue Heron colony GBH-03



Aerial view of Great Blue Heron colony GBH-03



GBH-06

Code	County	Topo Quad	Pairs
GBH-06	Rowan	Southmont	5

Description

This colony was located on a small forested island within Swearing Creek just above the Linwood Southmont Road bridge. The island was forested with a middle-aged pine stand. On 23 April 2002 there were 5 nesting pairs all with chicks.

Map location of Great Blue Heron colony GBH-06



Aerial view of Great Blue Heron colony GBH-06



GBH-07

Code	County	Topo Quad	Pairs
GBH-07	Rowan	Grist Mountain	1

Description

This colony was located on a small forested island within Abbott 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 23 April 2002 there was only 1 pair nesting on the island. This bird was incubating suggesting that additional pairs might join the site during the season.

Map location of Great Blue Heron colony GBH-07



Aerial view of Great Blue Heron colony GBH-07



Tuckertown Reservoir

Bald Eagles

A single Bald Eagle nest was detected within the Tuckertown Reservoir system. The nest was located within the upper section supporting previous suggestions that this area could support a breeding pair.

NEST: RO-02-02

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
RO-02-02	Rowan	High Rock	Y	Y	0

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 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 23 April 2002 an adult was observed in incubation posture on the nest. Second adult was not observed. On 6 June 2002 the nest was present and in good condition but no adults were present. The nest appeared to have failed. This is a common pattern with first-year nests.

Nest Condition – Nest structure was of moderate size. On 23 April 2002 nest was in good condition and appeared to be well lined. On 6 June 2002 nest was in good condition with well-formed cup and good 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 Bald Eagle nest RO-02-02



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 19 pairs.

GBH-04

Code	County	Topo Quad	Pairs
GBH-04	Davidson	High Rock	19

Description

This colony was located on a small forested island just below the High Rock Dam. This is a long linear island that contains a mixed stand of hardwoods and pines. Nests were built in both hardwoods and pines. All pairs were incubating on 23 April 2002.

Map location of Great Blue Heron colony GBH-04



Narrows

Bald Eagles

A single Bald Eagle nest was located along the shoreline of Narrows Reservoir for the second year. The nest is located along the edge of a canal behind Graveyard Island. Narrows Reservoir supports considerable residential development in the lower reaches near the dam. Along much of this shoreline, development is high enough to exclude use by breeding eagles. Habitat surrounding Narrows Dam could support breeding eagles. However, this habitat appears to fall within the new eagle territory located on Falls Reservoir. Considerable blocks of potential breeding habitat occur on the upper reach of Narrows Reservoir. It is possible that this habitat could support an additional eagle territory in the future.

NEST: ST-01-01

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

Nest Location

The Bald Eagle nest within Narrows Reservoir was located along the edge of a canal just behind Graveyard Island. This nest was first discovered in 2001. The nest was positioned within the first row of trees along the shoreline. Surrounding trees were of similar age and height. However, the position of the nest tree on the edge allowed direct access to the nest from the water side. This nest would be visible from the water on the canal or on the main stem of Narrows Reservoir. The nest would also be visible from the railroad tracks on the opposite side of the canal.

Nesting Activity

Bird Activity – On 23 April, 2002 a single adult eagle was perched along the east shoreline of Graveyard Island. The nest was in good condition with a well-formed cup and good lining. The nest also had considerable whitewash and had clearly had activity on the surface. No eggs or chicks were present in the nest. This nest appeared to have been active but likely failed. On 6 June 2002 no birds were observed within the territory. This contrasts with 2001 when this nest was active and produced 2 young.

Nest Condition – Nest structure is of moderate size and appears to be in good condition. On 23 April, nest appeared to have well-formed cup and good lining. The depth of the tree crotch appears to constrain nest depth. On both 23 April and 6 June 2002 nest had considerable whitewash around the outer cup.

Nest Substrate

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

Nest Position – Nest is positioned in a shallow top crotch very near the top of the crown. Supporting limbs were widely splayed such that sky exposure was approximately 80%.

Substrate Condition – Nest tree appeared to be in relatively good condition. White-wash may be having an impact on tree condition.

Potential Disturbance

Nest tree was not protected by a visual buffer and was easily visible from water and railroad tracks. It is not clear if nest is directly visible from residential area near Palmer Island. Nest was protected by extensive forest buffer on upland side and by railroad tracks and canal on the lake side. Access to nest tree would be fairly difficult from both land and water. Disturbance appears to be limited.

Map location of Bald Eagle nest ST-01-01



Aerial view of Bald Eagle nest ST-01-01



Great Blue Herons

A single colony of breeding Great Blue Herons was detected within Narrows Reservoir on an island at the confluence of Beaverdam and Reynolds Creeks. Total population estimate for this reservoir is 140 pairs.

GBH-05

Code	County	Topo Quad	Pairs
GBH-05	Montgomery	Badin	140

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. On 23 April 2002 most pairs were incubating.

Map location of Great Blue Heron colony GBH-05



Aerial view of Great Blue Heron colony GBH-05



Falls Reservoir

Bald Eagles

A single Bald Eagle nest was located along the shoreline of Falls Reservoir. This nest was located along the reservoir shoreline east of the town of Badin. The nest appeared to be in good condition and to have had recent work but no nesting attempts were documented. The short waterway comprising Falls Reservoir appears to be an ideal breeding location for Bald Eagles. The area is remote with extensive forest cover. Many trees are available that are large enough to support a nest structure. 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. Future work should monitor this territory for breeding activity.

NEST: ST-01-02

Nest Code	County	Topo Quad	Active Territory	Active Nest	Chicks Produced
ST-01-02	Stanly	Badin	N	N	-----

Nest Location

The Bald Eagle nest within Falls Reservoir was located on a steep embankment along the shoreline just east of the town of Badin. The nest tree was located in a small grove of 8-10 old supercanopy pines surrounded by younger growth. This nest has an extensive forest buffer on all sides and may not be visible from any access points. The nest is accessible from the loop road that comes from Route 1704.

Nesting Activity

Bird Activity – This nest was located on 27 March 2001. Although the nest was in good structural condition when examined on 23 April 2002, there was no indication that the surface of the nest had been worked during the 2002 season. No birds were present within the area. This nest appears to be abandoned.

Nest Condition – Nest structure is of fairly large size and was in good structural condition during both observations. Nest still had recognizable cup but no recent lining.

Nest Substrate

Substrate Type – The nest was built in a dead loblolly pine. The tree was one of several old seed trees left over a regenerating stand. These trees were in a supercanopy position over surrounding forest. Crown access for birds to the nest was very good.

Nest Position – Nest is positioned in a deep top crotch. Nest appeared to be in a very solid position. Because limbs were dead, sky exposure was 100%.

Substrate Condition – Nest tree was dead but limbs forming top crotch were complete. Nest tree was missing more than 25% of its bark indicating that it had been dead more than 1 year.

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-01-02



Aerial view of Bald Eagle nest ST-01-02



Great Blue Heron

No Great Blue Heron colonies were detected on Falls Reservoir. Nesting habitat is fairly limited on this waterway. The small forested islands located on the upper reach are the most likely location for future breeding. However, potential for colonization appears limited.