

2019

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AERIAL SURVEYS OF LAKE GASTON AND ROANOKE RAPIDS LAKE FOR NESTING BALD EAGLES: 2019 SEASON

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Project Partners:

**Dominion
The Center for Conservation Biology**



The Center for Conservation Biology is an organization dedicated to discovering innovative solutions to environmental problems that are both scientifically sound and practical within today's social context. Our philosophy has been to use a general systems approach to locate critical information needs and to plot a deliberate course of action to reach what we believe are essential information endpoints.

BACKGROUND

Context

The United States Fish and Wildlife Service (FWS) originally listed the Bald Eagle as federally endangered on 11 March 1967 under The Endangered Species Protection Act of 1966 (16 U.S.C. 668aa-668cc) and subsequently under The Endangered Species Act of 1973 (16 U.S.C. 1531 et seq). The primary reason cited for the original listing was broad-scale population declines linked to dichloro-diphenyl-trichloroethane (DDT) and associated reproductive failure. On December 31, 1972, DDT was banned from use in the United States. Since the ban on DDT and formal listing under The Endangered Species Act, Bald Eagle populations have increased dramatically across much of the lower 48 states. During a periodic population review, the FWS determined that specific reclassification goals had been reached as outlined in regional recovery plans. On 12 July, 1994, the FWS published the proposed rule to reclassify the Bald Eagle from endangered to threatened in most of the lower 48 states (59 FR 35584). This proposal was followed on 12 July 1995 by the formal downlisting of most Bald Eagle populations (60 FR 36000). In the lower 48 states Bald Eagles have increased from an estimated low in 1963 of 417 pairs (Sprunt 1963) to an estimated 5,748 pairs by 1998 (Millar 1999). On 6 July, 1999, the FWS published an Advance Notice of Intent to remove the Bald Eagle from the list of endangered and threatened wildlife (64 FR 36453). On 16 February, 2006 the U.S. Fish and Wildlife Service published a second Advance Notice of Intent to remove the Bald Eagle from the list of endangered and threatened wildlife (71 FR 8238). On 28 June, 2007 the Bald Eagle was formally removed from the list of endangered and threatened species. Since delisting The Bald and Golden Eagle Protection Act (BGEPA) (16 U.S.C. 668-668d) has become the lead federal legislation protecting the Bald Eagle population. As interpreted in the Notice (71 FR 8238) and the subsequent definition of terms (71 FR 8265) protection of Bald Eagles and their habitats under the BGEPA will be very similar to that provided under the ESA. The national management guidelines presented along with the Notice follow very closely the guidelines that have been used to manage eagles since the 1970s including the use of spatial buffers and activity restrictions to comply with the definition of “disturb”. The Bald Eagle continues to be listed as Threatened in Virginia under Virginia's Endangered Species Act (§29.1-563 - §29.1-570).

Bald Eagles in Virginia have experienced a dramatic recovery from a low of 33 breeding pairs in the 1970s to 726 pairs in 2011 (Watts and Byrd 2011) consistent with the broader Chesapeake Bay (Watts et al. 2008). Recovery within the state includes (1) an increase in the number of breeding territories, (2) an increase in reproductive rate, and (3) an expansion in geographic distribution. Nesting Bald Eagles now occur on most inland reservoirs of notable size. A similar pattern has been observed in inland portions of North Carolina (Watts 2008).

Objectives

Objectives for conducting an eagle survey on Dominion lands are: 1) to document the status, distribution, and success of nesting pairs in association with Project reservoirs; 2) to provide updated information to pertinent parties; and 3) to increase our understanding of Bald

Eagle natural history in interior regions of Virginia and North Carolina. Results of the survey are intended to support the information needs of Dominion required by the Roanoke Rapids and Gaston FERC License.

METHODS

Study Area

The survey area included the Roanoke River drainage between the John H. Kerr Dam and the Interstate 95 Bridge, below Roanoke Rapids, North Carolina. The focal water body included Lake Gaston, Roanoke Rapids Lake and their immediate tributaries.

Bald Eagle Survey

A standard 2-survey approach was used to evaluate bald eagle use of the study area (Fraser et al. 1983). These included a systematic nest survey and a productivity survey.

Nest Survey - All forested components of the Lake Gaston and Roanoke Rapids Lake reservoir system were surveyed for evidence of nesting Bald Eagles. The survey covered all shoreline of the reservoir system and their intermediate tributaries, from the John H. Kerr Dam to the interstate 95 bridge, below Roanoke Rapids, NC. 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 systematically moved between the shoreline and a distance of approximately 1 km inland, to cover the most probable breeding locations. All nests detected were plotted on recent aerial imagery layers on GPS enabled tablet computers 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. The nest survey was conducted on 19 March 2019.

Productivity Survey - Following the nest survey, all active Bald Eagle nests were rechecked on 2 May 2019 for productivity. A Cessna 172 aircraft was used to fly low over nests, allowing observers to examine nest contents. All eaglets were counted and aged by sight.

SURVEY FINDINGS

Bald Eagles

Seven territories were observed to be active on Lake Gaston, three active territories were found on Roanoke Rapids Lake, and two active territories were associated with the tail waters of Roanoke Rapids Lake during 2019 surveys (Figure 1, Appendix 1). Two inactive territories were located where older inactive nests were present (ME-19-01 and ME-19-02) but no new active nests were observed in the general vicinity of the older nests.

The twelve active territories located during the 2019 survey represent a 20% increase over the ten territories located during the last survey in 2014.

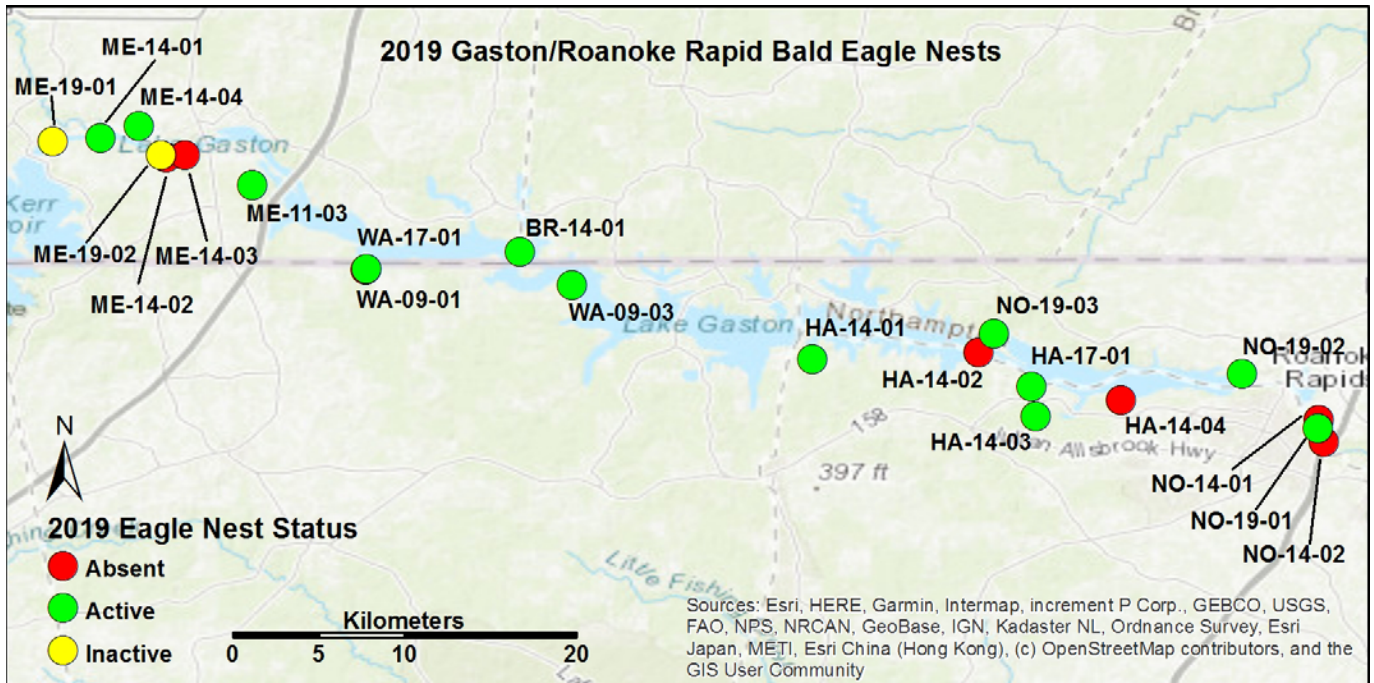


Figure 1. Overview of Bald Eagle nests observed during the 2019 survey.

2019 NEST OBSERVATIONS

Nest: ME-19-01

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
ME-119-01	Mecklenburg	Virginia	N	N	-

Nest Location

This nest was located in a pine tree on the north shore of Buggs Island, approximately 1.2 kilometers downstream of the John H. Kerr Dam. The nest is likely visible from the water.

Nesting Activity

Bird Activity – No eagles were observed associated with the nest during either the 19 March and 5 May 2019 flights,

Nest Condition – The nest was poor condition, with large sticks falling out. It had not been maintained during the 2018/2019 breeding season.

Nest Substrate

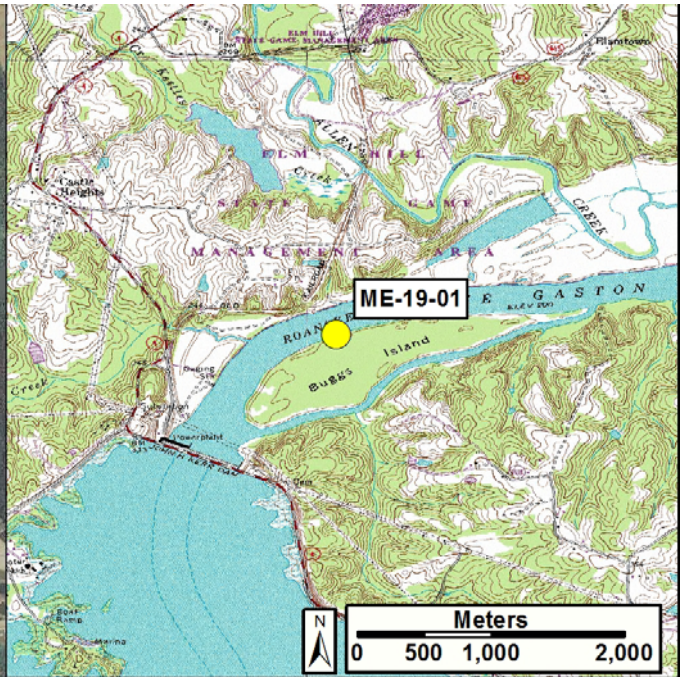
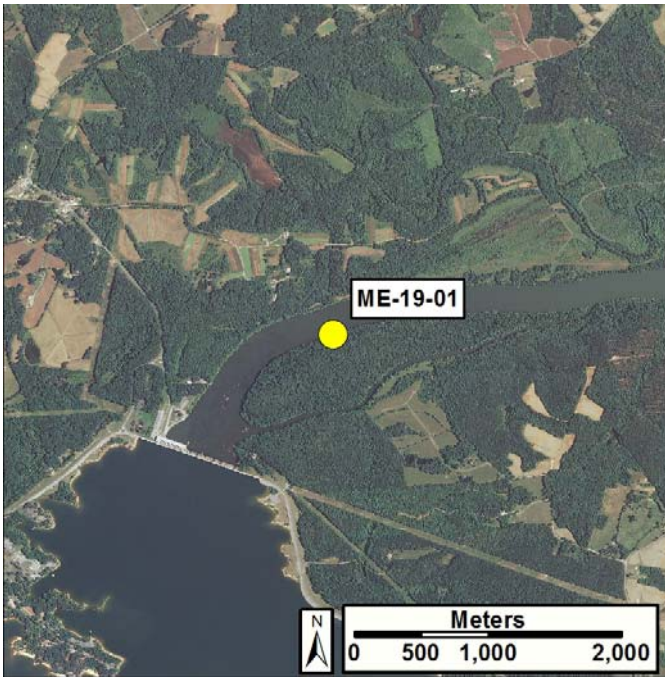
Substrate Type – The nest was in a loblolly pine tree in a hardwood forest with scattered pines.

Nest Position – The nest was positioned on multiple branches off of the side of the main trunk.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

This nest is likely visible from the water and could be accessed by boaters.



Maps and Images of ME-19-01

Nest: ME-14-01

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
ME-14-01	Mecklenburg	Virginia	Y	Y	2

Nest Location

This nest was located in a pine tree near the top of a ridge, along the south shoreline of Lake Gaston, approximately 3.3 kilometers below John H. Kerr Dam. The nest is not easily visible from the water.

Nesting Activity

Bird Activity – On 19 March 2019 an adult was attending 2 small chicks, approximately 3 weeks old. On 2 May 2019, 2 chicks, approximately 8 weeks old, were present in the nest.

Nest Condition – The nest was in good structural condition.

Nest Substrate

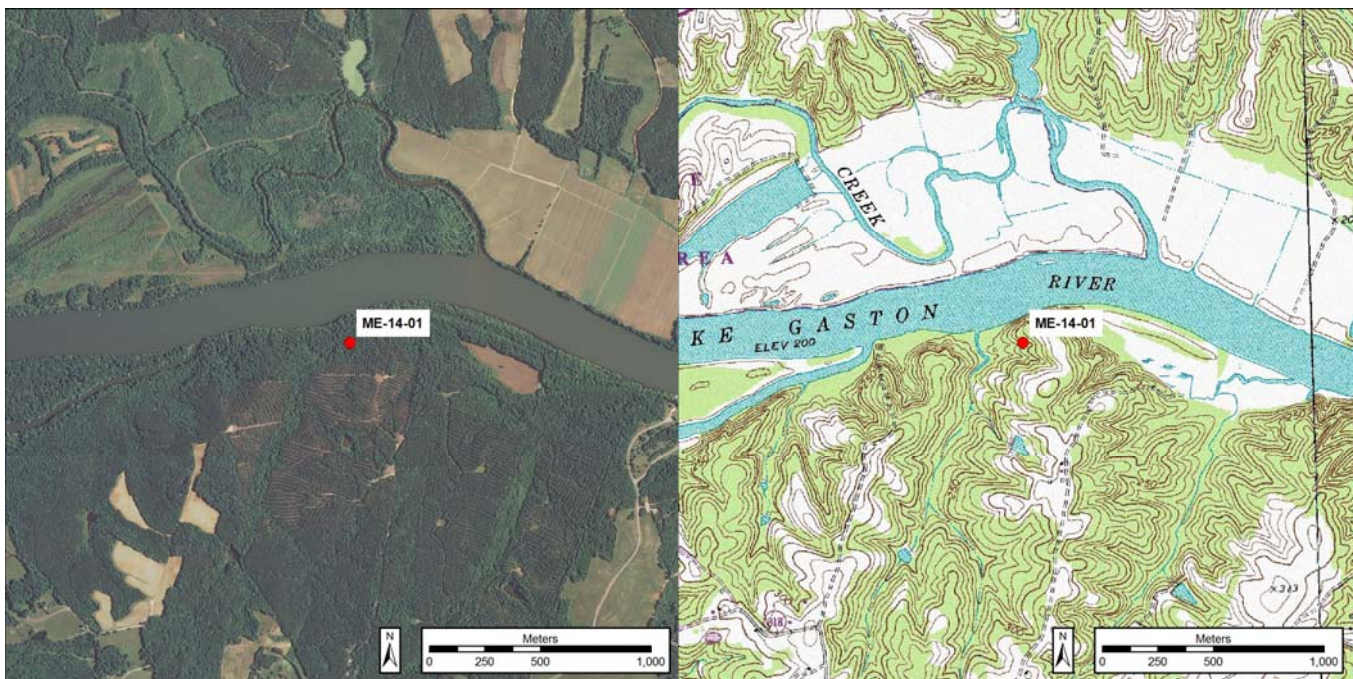
Substrate Type – The nest was in a loblolly pine tree in a mixed pine/hardwood forest.

Nest Position – The nest was positioned on multiple branches off of the side of the main trunk.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

This nest is not easily visible from the water with no roads or major trails within immediate vicinity. Disturbance is most likely not an issue at this nest site.



Maps ME-14-01



Image of ME-14-01

Nest: ME-14-04

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
ME-14-04	Mecklenburg	Virginia	Y	Y	1

Nest Location

This nest was located in a pine tree in a pasture near a pond on the northern shoreline of Lake Gaston, approximately 4.8 kilometers below John H. Kerr Dam, and 0.8 kilometers inland. The nest is not visible from the water but highly visible if you are near the nest.

Nesting Activity

Bird Activity – On 19 March 2019, 1 chick, approximately 4 weeks old, was present in the nest with an adult. On 2 May 2019, a large chick, approximately 11 weeks old was observed perched on a branch in the nest tree

Nest Condition – The nest was in good structural condition.

Nest Substrate

Substrate Type – This nest was located in a pine tree in a pasture near a pond on the

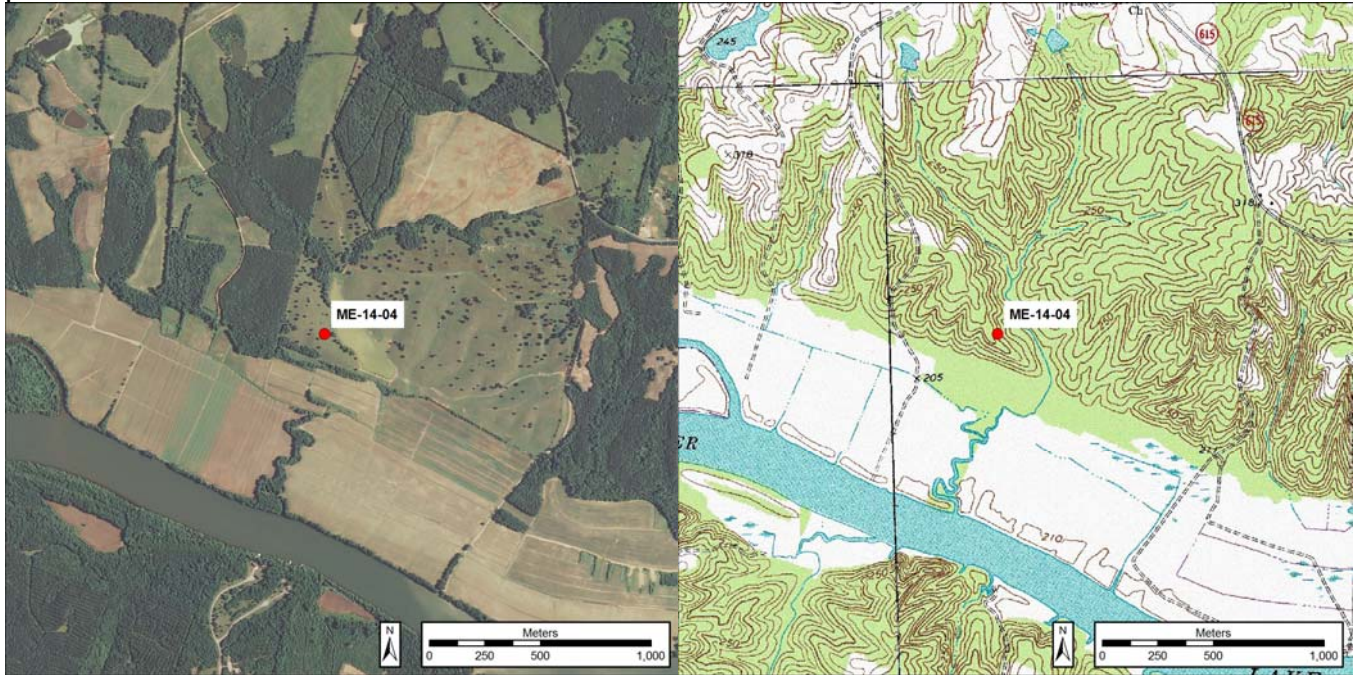
northern shoreline of Lake Gaston.

Nest Position – The nest was positioned in the terminal crotch of the pine tree.

Substrate Condition – Nest tree appeared to be in good health.

Potential Disturbance

This nest is not visible from the water but highly visible if one is near the nest. Disturbance would be likely with any recreational or agricultural activities in the pasture or on the pond near the nest.



Maps of ME-14-04

Nest: ME-19-02, ME-14-02 and ME-14-03

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
ME-19-02	Mecklenburg	Virginia	N	N	-
ME-14-02	Mecklenburg	Virginia	N	N	-
ME-14-03	Mecklenburg	Virginia	N	N	-

Nesting Activity

Bird Activity – No eagle activity was observed at nest ME-19-02 during either flight.

Nest Condition – ME-19-02 was in good structural condition but had not been worked on during the 2018/2019 breeding season. ME-14-02 was found to be a remnant nest, with only a few sticks left during the 19 March 2019 flight. This nest was not relocated during the 2 May 2019 flight. Nest ME-14-03 was found to be absent on the 19 March 2019 flight.



Image of ME-14-04

Nest Substrate

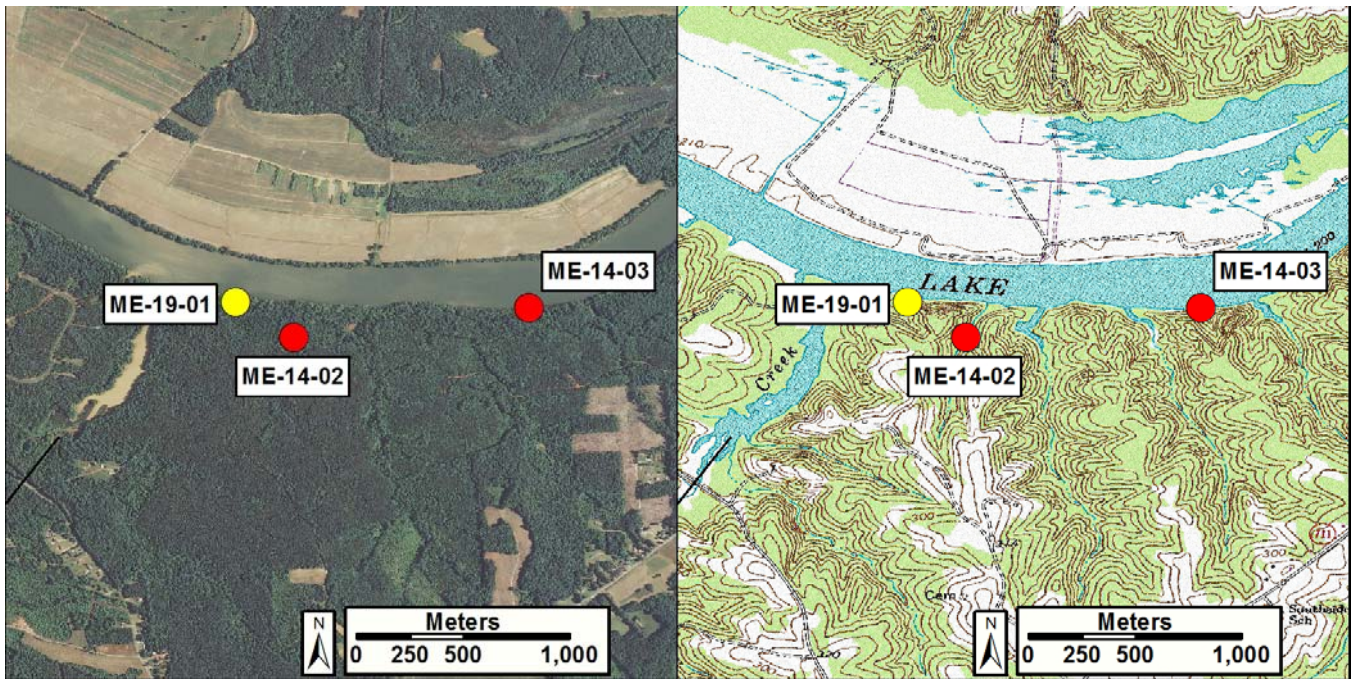
Substrate Type – ME-19-02 is in a hardwood tree on the south shoreline of Lake Gaston, approximately 0.4 kilometers below the mouth of Cotton Creek. ME-14-02 was formerly located in a loblolly pine tree in a mixed pine/hardwood forest. ME-14-03 was formerly located in a hardwood on the immediate shoreline of Lake Gaston.

Nest Position – ME-19-02 is located in a fork of hardwood tree trunk. ME-14-02 was formerly positioned on multiple branches off of the side of the main trunk. ME-14-03 was formerly positioned in the terminal crotch of the hardwood.

Substrate Condition – All nest trees appeared to be in good health

Potential Disturbance

Nest ME-19-02 is possibly visible from the water during leaf off. However the lack of a shoreline beach and the slope to the nest would likely prevent disturbance from the water.



Maps of ME-19-02, ME-14-02 and ME14-03

Nest: ME-11-03

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
ME-11-03	Mecklenburg	Virginia	Y	Y	3

Nest Location

This nest was located in one of a few remaining super canopy hardwood trees, along a drainage, in an older clear cut. The nest is located approximately 1.0 km inland of the south shoreline of Lake Gaston, approximately 1.0 kilometers above the interstate 85 bridge.

Nesting Activity

Bird Activity – On 19 March 2019, an adult was brooding smaller chicks. On 2 May 2019, 3 chicks, approximately 8 weeks old, were present in the nest.

Nest Condition – The nest was in good structural condition.

Nest Substrate

Substrate Type – The nest was in a super canopy hardwood tree in an 8 year old clear cut.

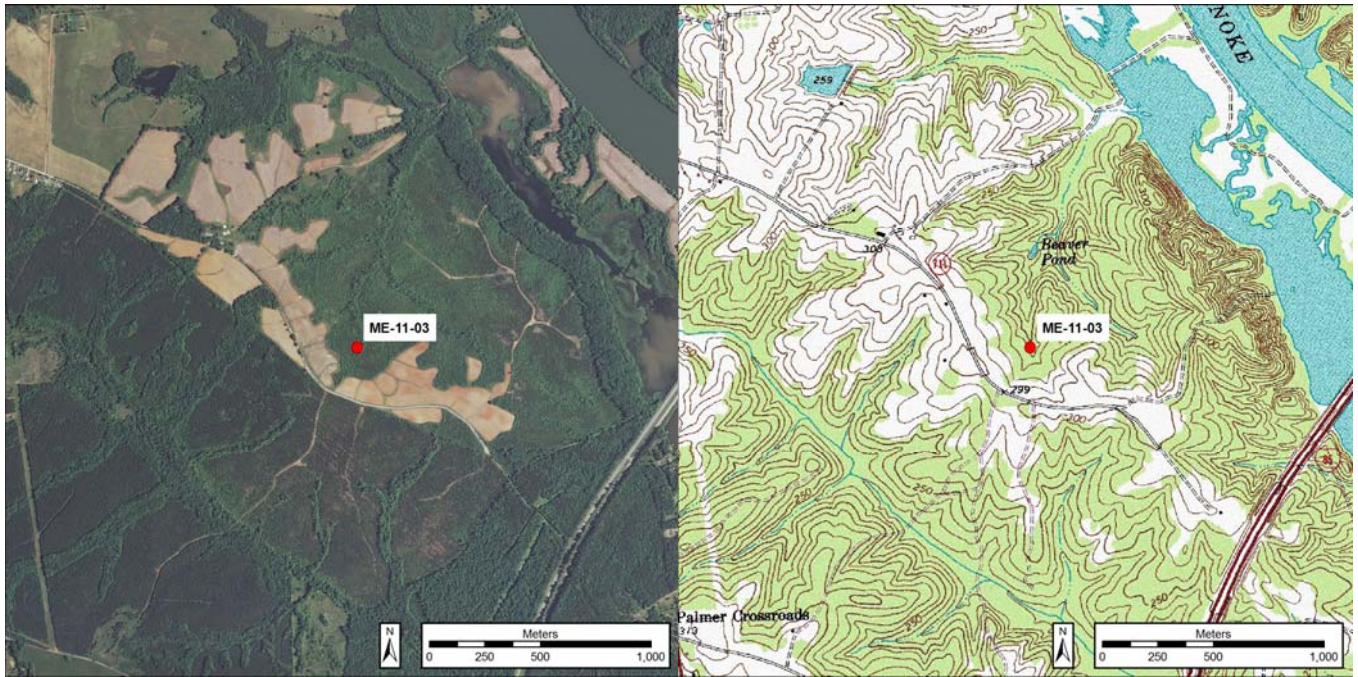
Nest Position – The nest was positioned in the terminal crotch of the hardwood.

Substrate Condition – The tree, while still alive, had multiple dead branches and did not appear to be in good health.

Potential Disturbance

This nest is not visible from the water but is visible from route 711 (Hardage Road) with no roads or major trails within immediate vicinity. Disturbance is not likely except for some

ranching/agriculture activity on nearby pastures.



Maps and Images of ME-11-03

Nest: WA-17-01 and WA-09-01

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
WA-17-01	Warren	North Carolina	Y	Y	2
WA-09-01	Warren	North Carolina	Y	N	-

Nest Location

Nest WA-17-01 is located in a pine tree on the eastern shore of Hawtree Creek, approximately 1.8 kilometers upstream from the mouth, and 0.3 kilometers upstream from the 1307/712 (Peete Farm Road) bridge. The nest is not visible from the Lake Gaston but easily visible from Hawtree Creek or the Peete Farm Road Bridge. The old nest, WA-09-01, which was located approximately 100 meters south of the current nest is now absent.

Nesting Activity

Bird Activity – On 19 March 2019, an adult was observed brooding small chicks. On 2 May 2019, 2 chicks approximately 7 weeks old were observed in the nest.

Nest Condition – The nest was in good structural condition.

Nest Substrate

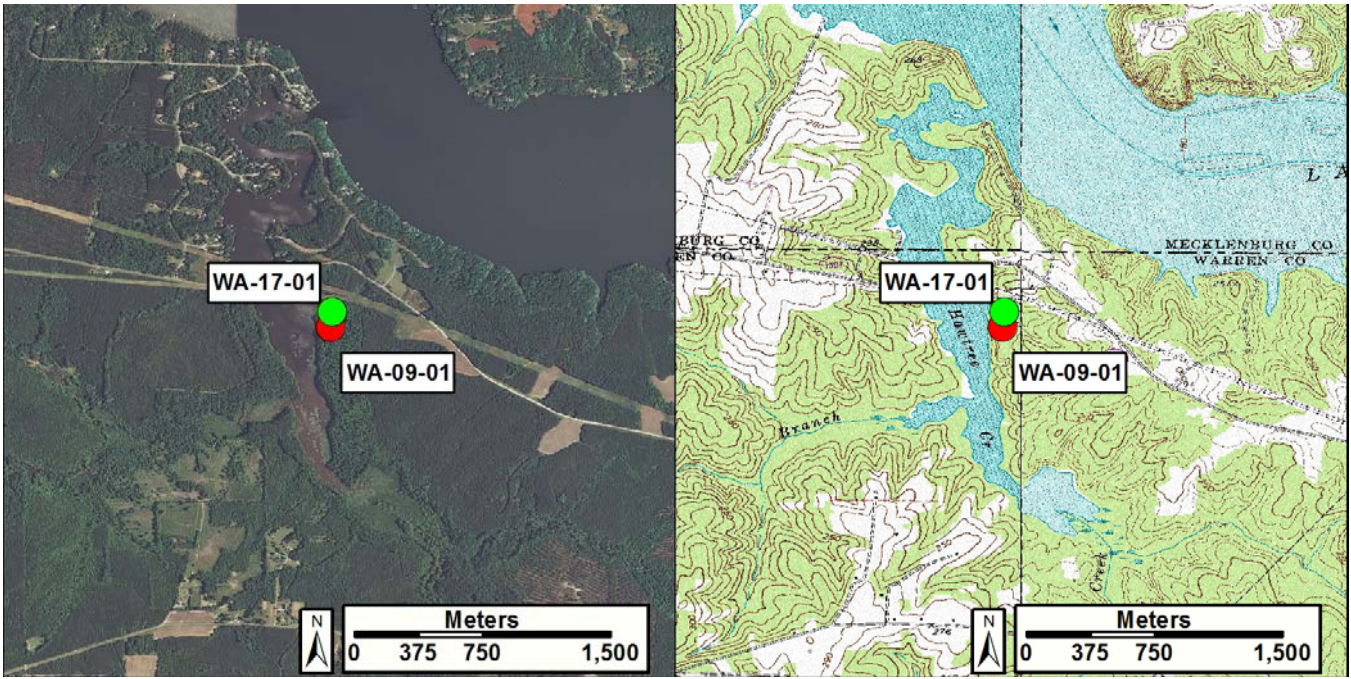
Substrate Type – The nest was in a loblolly pine tree in a sparse mixed pine/hardwood forest.

Nest Position – The nest was positioned on multiple branches off of the side of the main trunk.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

This nest is visible from Hawtree Creek or the Peete Farm Road Bridge. Disturbance is not likely, unless boats are anchored in Hawtree creek near the nest. The nest is set back approximately 75 to 100 meters off of the shore line so boat traffic would most likely not be an issue at this nest site.



Maps and Images of WA-17-01 and WA-09-01

Nest: BR-14-01

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
BR-14-01	Brunswick	Virginia	Y	Y	2

Nest Location

This nest was located in a pine tree on the northern shore of Lake Gaston, about equidistant from the shore line and Route 612 (Morristown Road). The nest is not likely visible from the Lake Gaston or Morristown Road.

Nesting Activity

Bird Activity – On 19 March 2019 an adult was brooding small chicks. On 5 May 2019, 2 chicks, approximately 7 weeks old, were present in the nest.

Nest Condition – The nest was in good structural condition.

Nest Substrate

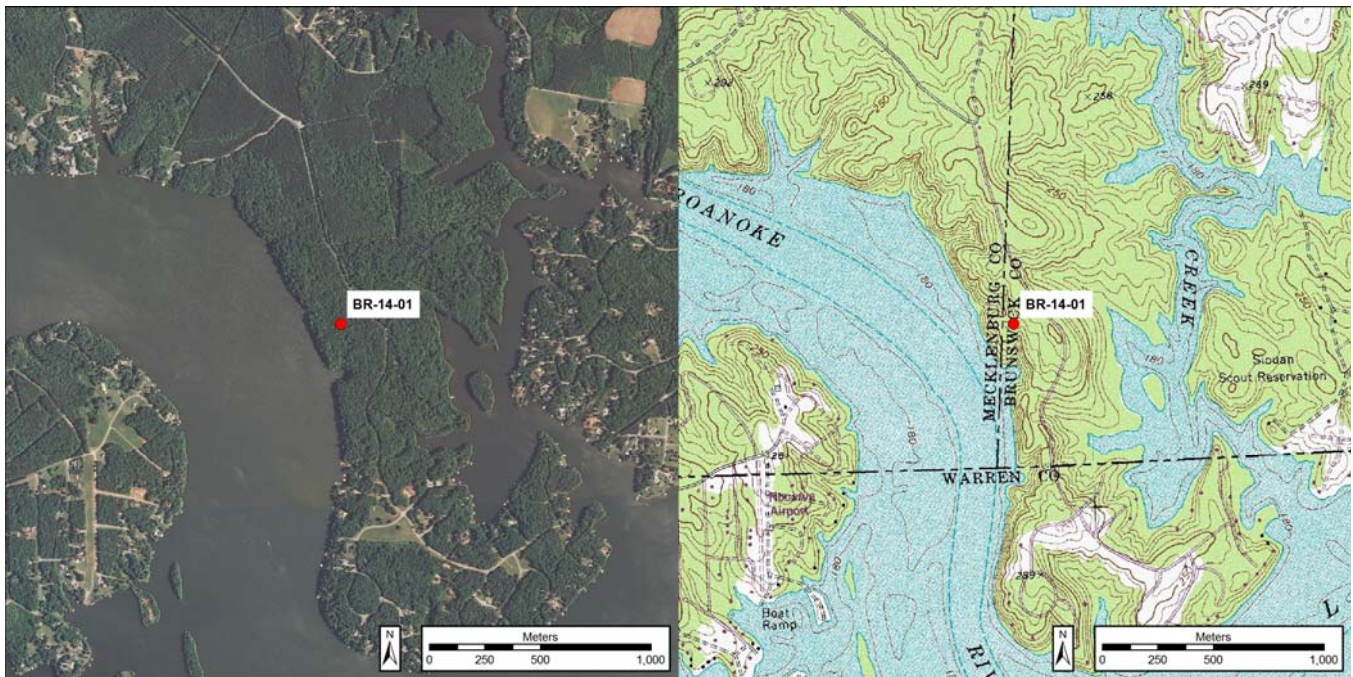
Substrate Type – The nest was in a loblolly pine tree in a primarily pine forest.

Nest Position – The nest was positioned in the terminal crotch of the pine.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

This nest is not likely visible from the Lake Gaston or Morristown Road. Disturbance is not likely at this nest site.



Maps of BR-14-01



Image of BR-14-01

Nest: WA-09-03

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
WA-09-03	Warren	North Carolina	Y	Y	1

Nest Location

This nest was located along the south shoreline of Lake Gaston, on a point of land north of the crossroads of Five Forks and northwest of Lyons Creek. The point of land is elevated approximately 50 feet above the lake surface. The nest is in a small block of older loblolly pines next to a newer network of roads and house sites.

Nesting Activity

Bird Activity – On 19 March 2019, the nest appeared to have fresh lining and in recent use. However, no adults or young were observed. On 2 May 2019 a single chick, approximately 9 weeks old, was observed in the nest. This chick was hidden and not observed on the first flight.

Nest Condition – The nest is damaged and partially falling out of the tree.

Nest Substrate

Substrate Type – The nest was in a loblolly pine tree that was on the edge of an older block of pines and a regenerating pine stand. The tree had good access for the birds from the south.

Nest Position – The nest was positioned in a multi-pronged top crotch with approximately 50% sky exposure.

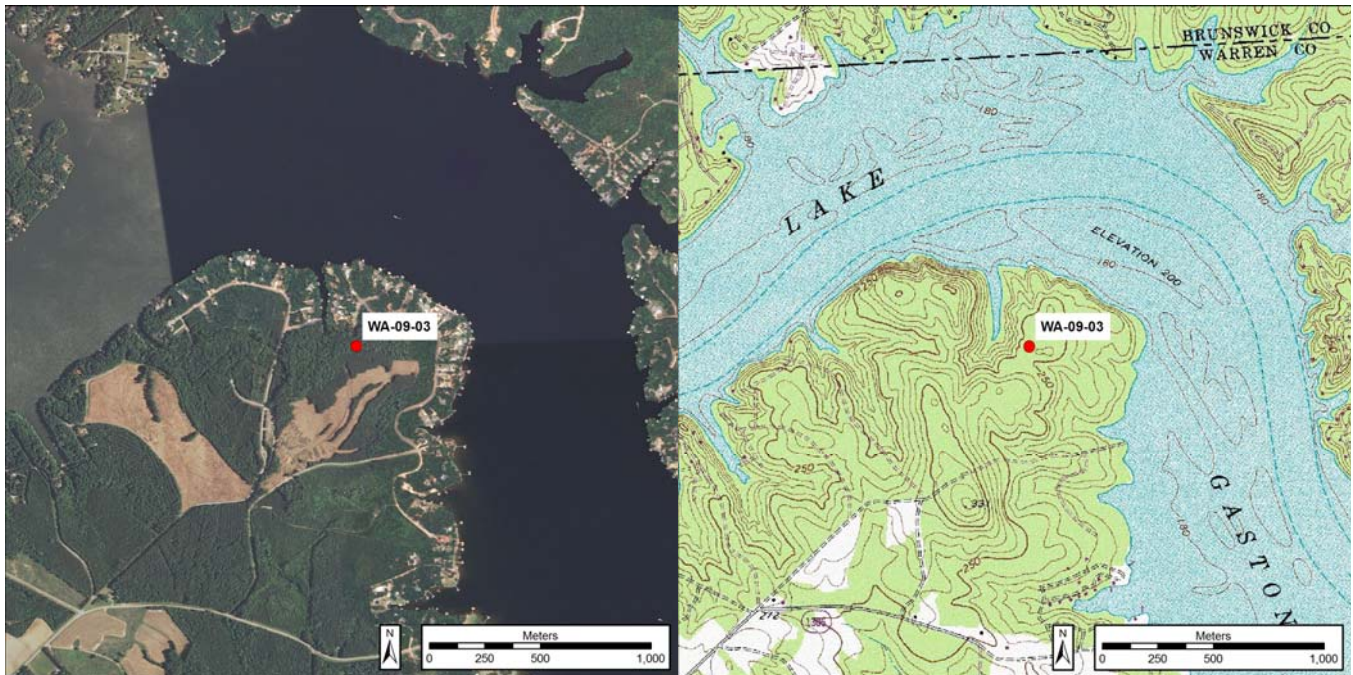
Substrate Condition – Nest tree appeared to be in good health.

Potential Disturbance

The following statement about potential disturbance is from the 2009 survey report

“This nest site is visible from a dirt road and a cleared area to the north. The nest appears to be easily accessible from the clearing. It should be noted that there has been considerable recent changes in land use within the management buffer of this nest site. Human activity appears to include land clearing, road construction, house construction, and fence construction. The dump being used for cleared stumps and vegetation debris is in very close proximity to this nest. A ground visit to examine ongoing sources of disturbance may be warranted.” (Watts 2009).

Additional clearing near this nest has occurred within recent years. This pair seems like it may be habituated to some disturbance.



Maps of WA-09-03

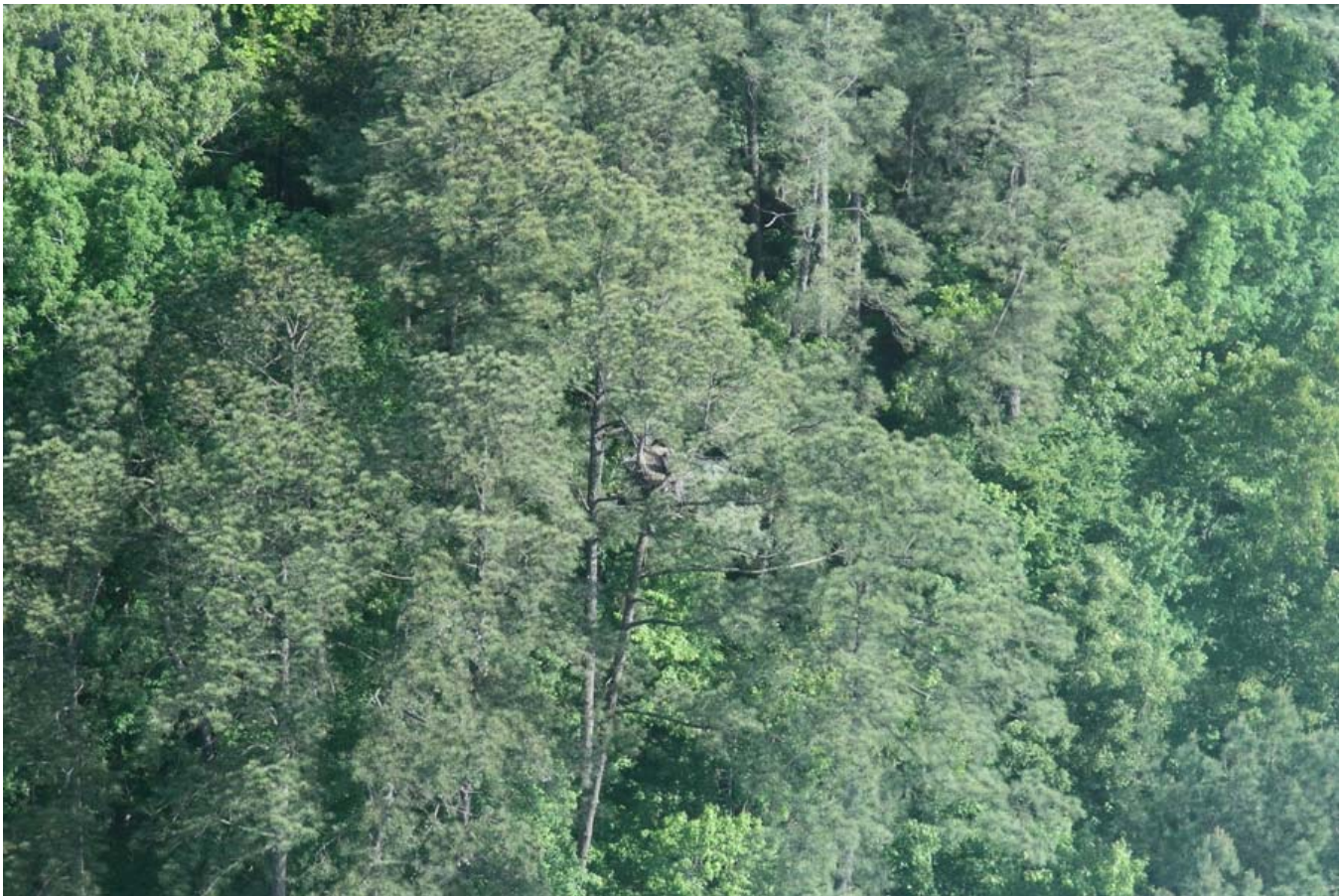


Image of WA-09-03

Nest: HA-14-01

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
HA-14-01	Halifax	North Carolina	Y	Y	0

Nest Location

This nest is located in a pine on a point of land on the southern shore of Lake Gaston. The nest tree is within a strip of mature trees between a 10 year old clear cut and Heather Glenn Drive. The nest is not likely visible from Heather Glenn Drive. This nest is likely within the territory of the old nest HA-09-01 which is now absent.

Nesting Activity

Bird Activity – On 19 March 2019, an adult was observed brooding small chicks. On 2 May 2019, the nest was observed to have sustained damage with much of the nest falling from the tree. No adults or chicks were observed with the nest during the second flight.

Nest Condition – The nest was in good structural condition on the first flight but had partially collapsed, with half the nest falling out of the tree by 2 May 2019.

Nest Substrate

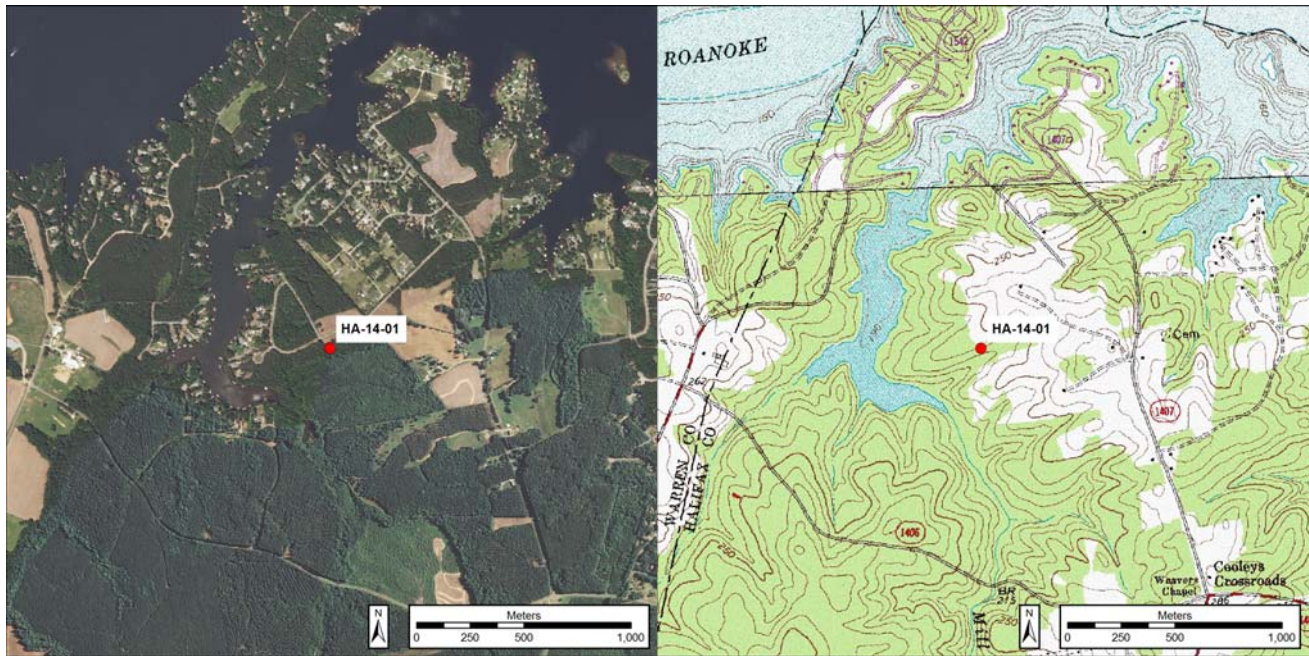
Substrate Type – The nest was in a loblolly pine tree within a strip of mature trees between a 10 year old clear cut and Heather Glenn Drive.

Nest Position – The nest was positioned in the sub-terminal crotch of the pine.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

The nest is not likely visible from Heather Glenn Drive. Disturbance is not likely unless development occurs along Heather Glenn Drive and/or Rockcrest Lane.



Maps of HA-14-01

Nest: HA-14-02

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
HA-14-02	Halifax	North Carolina	N	N	-

Nest Location

This now absent nest was located along the south shoreline of Roanoke Rapids Lake, 0.6 kilometers below the upper dam. The nest was situated on the bluff overlooking the lake just east of the powerline right of way. The nest was likely visible from the Roanoke Rapids Lake.

Nesting Activity

Bird Activity – No bird activity observed.

Nest Condition – Now absent



Image (from 2014) of HA-14-01

Nest Substrate

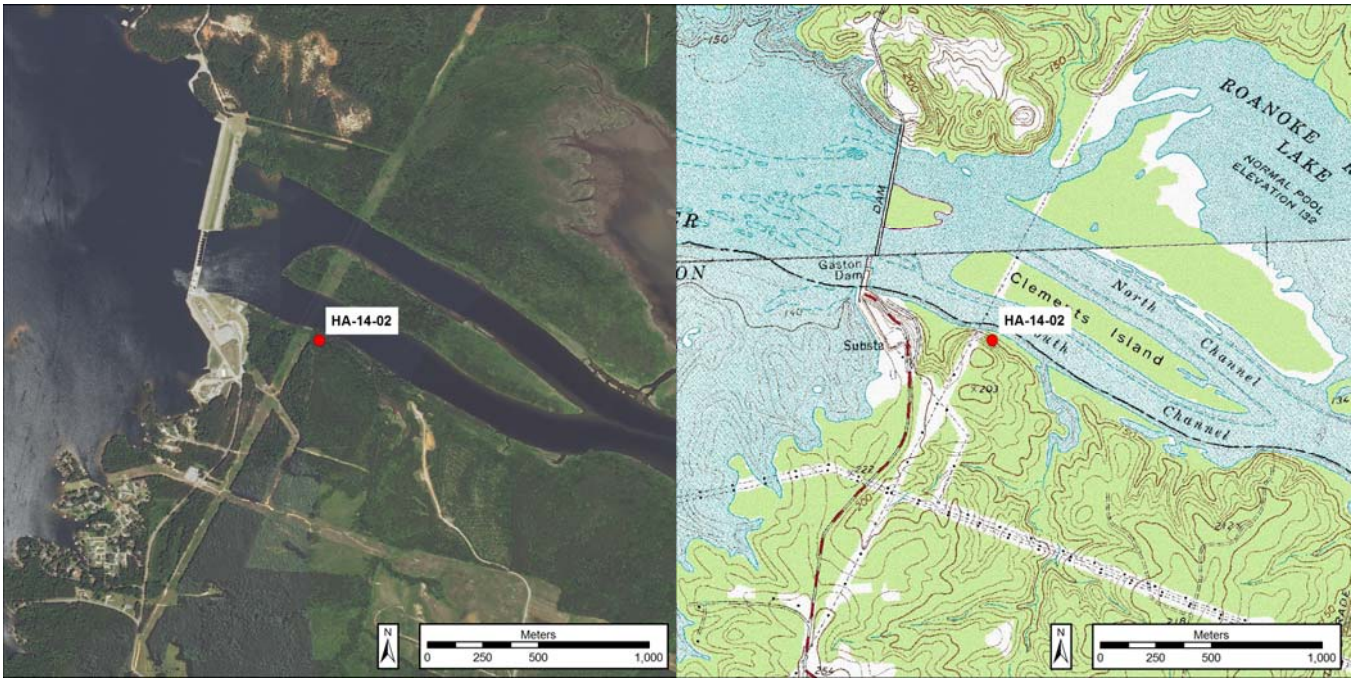
Substrate Type – The nest was in a loblolly pine tree overlooking Roanoke Rapids Lake at the edge of a powerline right of way.

Nest Position – The nest was positioned in the sub-terminal crotch of the pine.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

This now absent nest was probably not that susceptible to disturbance by boat traffic since it was positioned high on the bluff.



Maps and Image (from 2014) of HA-14-02

Nest: NO-19-03

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
NO-19-03	Northampton	North Carolina	Y	Y	0

Nest Location

This new nest is located in a hardwood in the wetlands on the north shore of the Roanoke Rapid Lake, approximately 1.0 kilometers downstream from the Gaston dam.

Nesting Activity

Bird Activity – On 19 March 2019 an adult was observed incubating on the nest. On 2 May 2019 the nest was observed to be empty with no sign of adults, chicks, or eggs.

Nest Condition – The nest is in good condition.

Nest Substrate

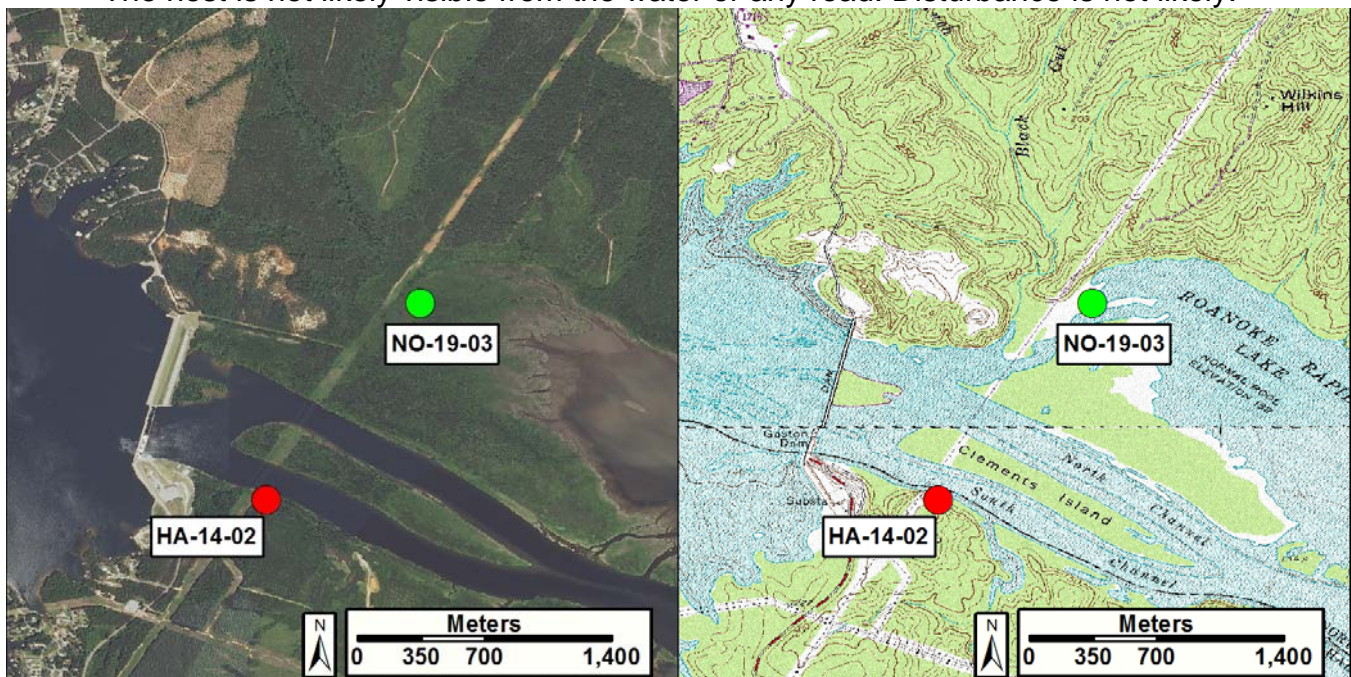
Substrate Type – The nest is in a hardwood tree within a wetland.

Nest Position – The nest is positioned in the terminal crotch of a hardwood tree.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

The nest is not likely visible from the water or any road. Disturbance is not likely.



Maps of NO-19-03



Image of NO-19-03

Nest: HA-14-03

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
HA-14-03	Halifax	North Carolina	Y	Y	3

Nest Location

This nest was located in a pine within a strip of mature trees left along a drainage in a 9 year old clear cut. The nest location is approximately 1.9 kilometers inland of the southern shore of Roanoke Rapids Lake.

Nesting Activity

Bird Activity – On 19 March 2019, small chicks were being brooded by an adult. On 2 May 2019, 3 chicks, approximately 7 weeks old, were present in the nest.

Nest Condition – The nest was in good structural condition.

Nest Substrate

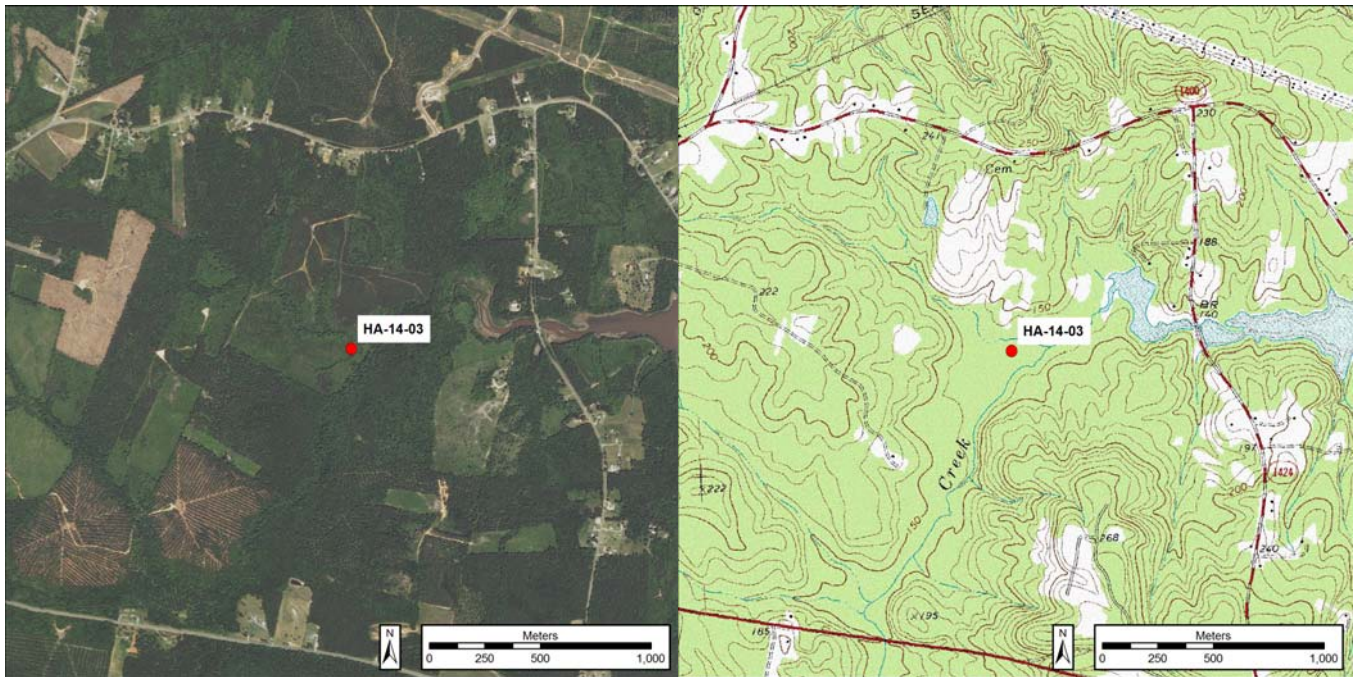
Substrate Type – The nest was in a loblolly pine tree within a strip of mature trees along a drainage in a 9 year old clear cut.

Nest Position – The nest was positioned in the terminal crotch of the pine.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

The nest is not visible from the water or any road. Disturbance is not likely.



Maps of HA-14-03

Nest: HA-17-01

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
HA-17-01	Halifax	North Carolina	Y	Y	2

Nest Location

This nest is located in an uncut pine within a recent clear cut just south, and near the edge, of the line 90 right of way.

Nesting Activity

Bird Activity – On 19 March 2019, small chicks were being brooded by an adult. On 2 May 2019, 2 chicks, approximately 7 weeks old, were observed in the nest.

Nest Condition – The nest was in good structural condition.

Nest Substrate

Substrate Type – The nest was in a loblolly pine tree within a recent clear cut just south, and near the edge, of the line 90 right of way.

Nest Position – The nest was positioned on multiple branches off of the side of the main trunk.

Substrate Condition – Nest tree appeared to be in good health



Image of HA-14-03

Potential Disturbance

The nest is visible from right of way. Frequent travel and/or work along the right of way may cause disturbance.

Nest: HA-14-04

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
HA-14-04	Halifax	North Carolina	N	N	-

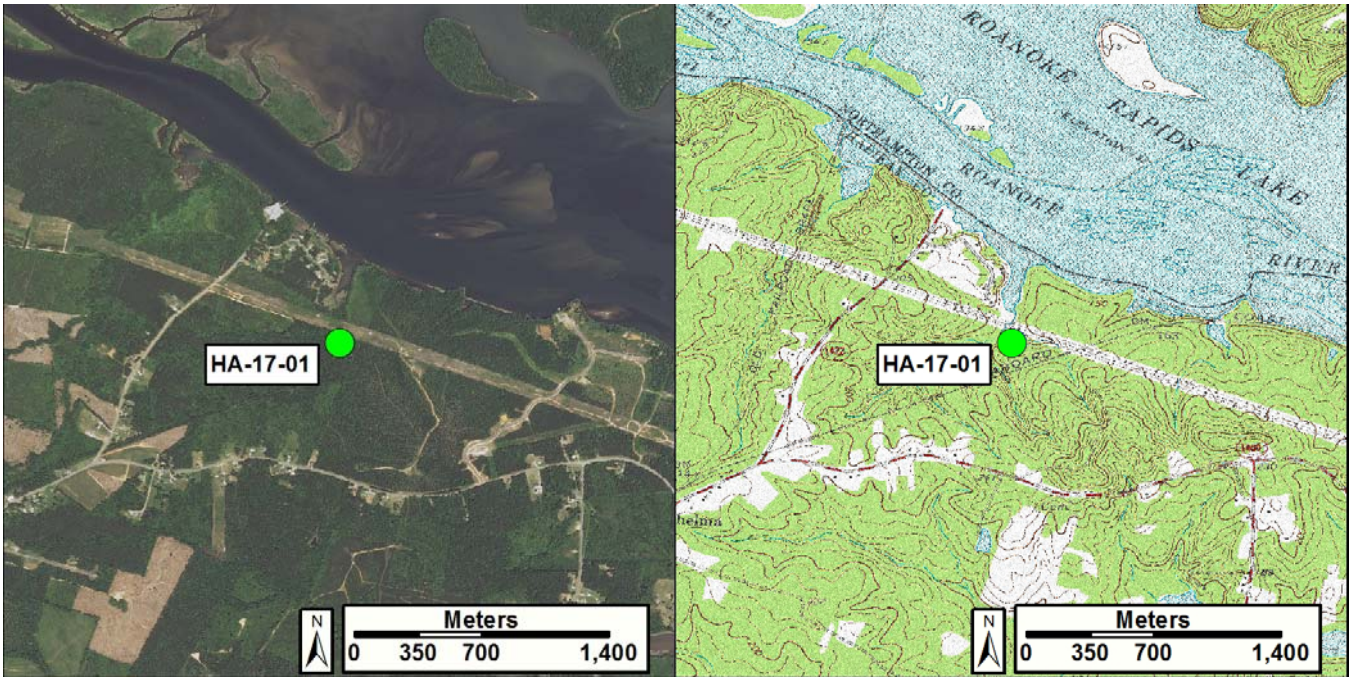
Nest Location

This now absent nest was located in a pine along a small tributary on the southern shore of Roanoke Rapids Lake, just south of a power line right of way. The nest was approximately 5 kilometer above the lower dam. This nest was likely the same territory of the now absent nest HA-09-02.

Nesting Activity

Bird Activity – No eagle activity observed.

Nest Condition – Absent.



Maps and Image of HA-17-01

Nest Substrate

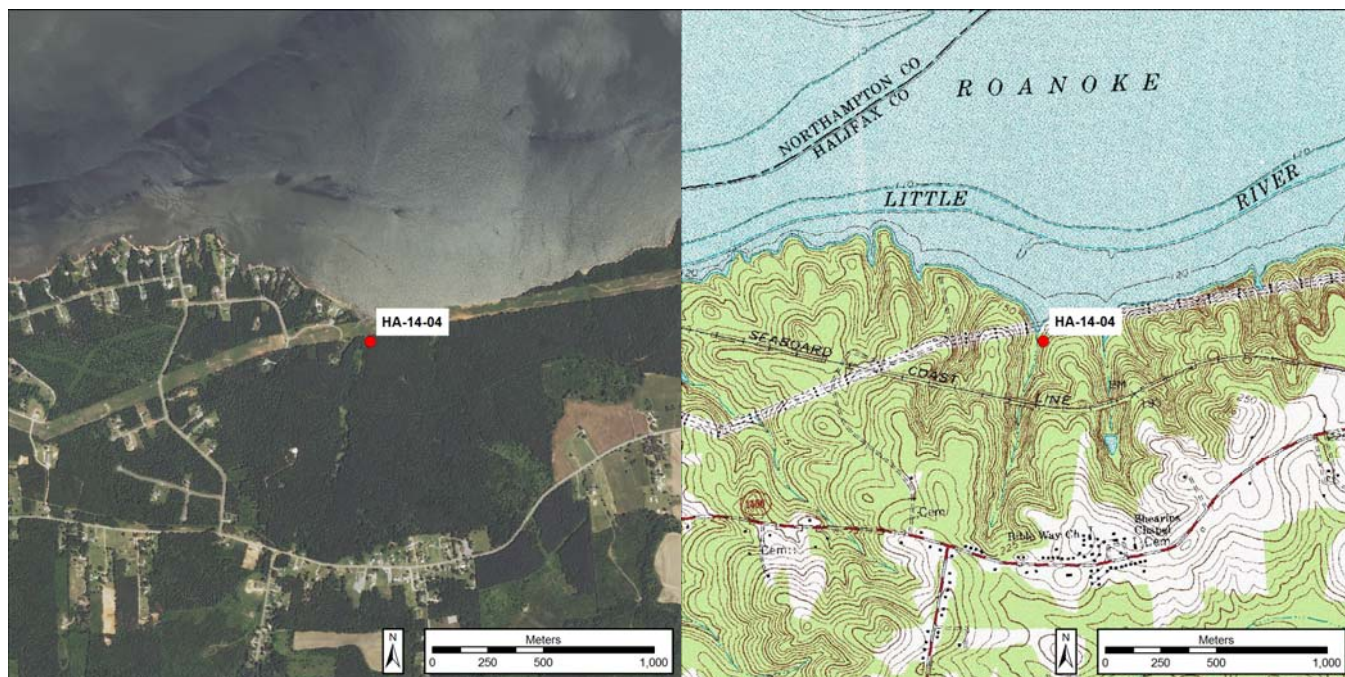
Substrate Type – The nest was in a loblolly pine tree along a small tributary on the southern shore of Roanoke Rapids Lake, just south of a power line right of way.

Nest Position – The nest was positioned on multiple branches off of the side of the main trunk.

Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

The nest was possibly visible from the houses to the west, but disturbance was not likely.



Maps of HA-14-04

Nest: NO-19-02

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
NO-19-02	Northampton	North Carolina	Y	Y	1

Nest Location

This nest is located in pine within primarily hardwood forest on the north shore of the Roanoke River approximately 0.6 kilometers downstream of the Roanoke Rapids dam.

Nesting Activity

Bird Activity – On 19 March 2019, small chicks were being brooded by an adult. On 2 May 2019, 1 chick, approximately 8 weeks old, was observed in the nest.

Nest Condition – The nest was in good structural condition

Nest Substrate

Substrate Type – The nest is high in a loblolly pine tree within primarily hardwood forest.

Nest Position – The nest was positioned high in a terminal crotch of the main trunk.

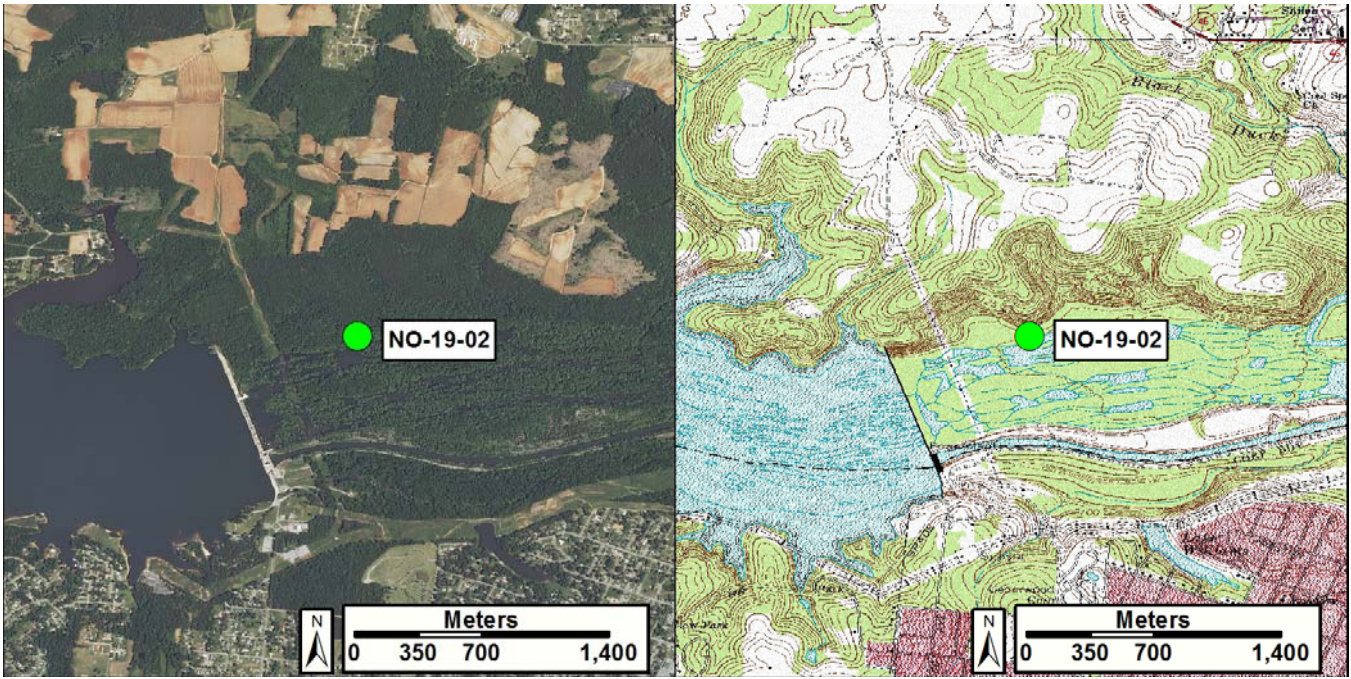
Substrate Condition – Nest tree appeared to be in good health

Potential Disturbance

The nest is not likely visible from the water and no disturbance is likely.



Image (from 2014) of HA-14-04



Maps and Image of NO-19-02

Nest: NO-19-01, NO-14-01 and NO-14-02

Nest Code	County	State	Active Territory	Active Nest	Chicks Produced
NO-19-01	Northampton	North Carolina	Y	Y	1
NO-14-01	Northampton	North Carolina	Y	N	-
NO-14-02	Northampton	North Carolina	N	N	-

Nest Location

NO-19-01 is located in a pine on the edge power line right of way, near of an agricultural field on the northeast shore of the Roanoke Rapids Lake tail waters, approximately 1.0 kilometers upstream of the interstate 95 bridge. The now absent NO-14-01 was located in a hardwood tree on the edge of an agricultural field on the northern shore of the Roanoke Rapids Lake tail waters, approximately 1.8 kilometers upstream of the interstate 95 bridge and 0.4 kilometers inland. The now absent NO-14-02 was located in a hardwood on a small island in the tail waters approximately 0.4 kilometers upstream of the interstate 95 bridge.

Nesting Activity

Bird Activity – On 19 March 2019, an adult was observed brooding small chicks at nest NO-19-01. On 2 May 2019, a single chick, approximately 7 weeks old was observed in NO-19-01. No eagle activity was observed at the now absent NO-14-01 and NO-14-02.

Nest Condition – Both NO-14-01 and NO-14-02 are now absent. NO-19-01 was in good condition.

Nest Substrate

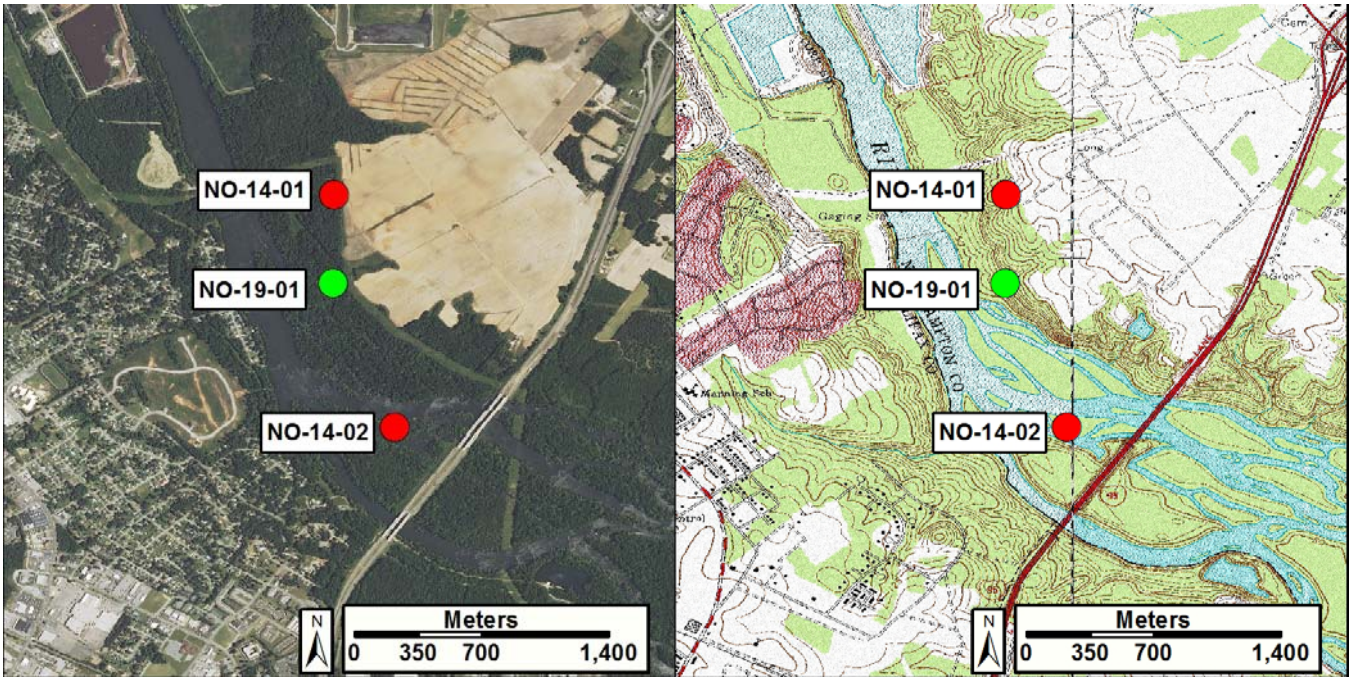
Substrate Type – NO-19-01 is located in a loblolly pine on the edge power line right of way, near of an agricultural field on the northeast shore of the Roanoke Rapids Lake tail waters. The now absent NO-14-01 was located in a hardwood on the edge of an agricultural field on the northern shore of the Roanoke Rapids Lake tail waters. The now absent NO-14-02 was located in a hardwood on a small island in the tail waters approximately 0.4 kilometers upstream of the interstate 95 bridge.

Nest Position – NO-19-01 is positioned on a lateral branch near the top of the tree.

Substrate Condition – The pine tree of NO-19-01 was in good health. The hardwood tree of nest NO-14-01 appeared to be in good health. The hardwood tree of nest NO-14-02 appeared to be dead.

Potential Disturbance

NO-19-01 is not visible from the water but disturbance would be possible during any agricultural activities occurring in the adjacent agricultural field.



Maps and Image of NO-19-01

LITERATURE CITED

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Appendix I. Observations of new and previously known nests during the 2019 survey.

Nest Code	Tree	19 March 2019 Observation	2 May 2019 Observation	2019 Nest Status	2019 Nest Productivity	Longitude	Latitude
ME-14-01	Pine	Active (2 chicks 3 wks old)	2 chicks 8 weeks old	Active	2	-78.264306	36.608402
ME-14-04	Pine	Active (1 chick 4 wks old)	1 chick 11 weeks old	Active	1	-78.244278	36.614781
ME-14-02	Pine	Remnant	Absent	Absent		-78.230244	36.598209
ME-14-03	Hardwood	Absent	Absent	Absent		-78.220310	36.599424
ME-11-03	Hardwood	Active (small chicks)	3 chicks 8 weeks old	Active	3	-78.185301	36.583869
WA-09-01	Pine	Absent	Absent	Absent		-78.125730	36.539802
BR-14-01	Pine	Active (small chicks)	2 chicks 7 weeks old	Active	2	-78.045209	36.549355
WA-09-03	Pine	Active (empty, but with this year's lining)	1 chick 9 weeks, hidden first flight	Active	1	-78.017934	36.532146
HA-14-01	Pine	Active (brooding)	empty damaged fell out	Active	0	-77.892483	36.493361
HA-14-02	Pine	Absent	Absent	Absent		-77.805364	36.496556
HA-14-03	Pine	Active (small chicks)	3 chicks 7 weeks old	Active	3	-77.775560	36.463147
NO-14-02	Hardwood	Absent	Absent	Absent		-77.628001	36.461624
NO-14-01	Hardwood	Absent	Absent	Absent		-77.625002	36.450127
HA-14-04	Pine	Absent	Absent	Absent		-77.731116	36.471664
HA-17-01	Pine	Active (brooding)	2 chicks 7 weeks old	Active	2	-77.777977	36.478727
WA-17-01	Pine	Active (brooding)	2 chicks 7 weeks old	Active	2	-78.125621	36.540606
NO-19-01	Pine	Active (brooding)	1 chicks 7 weeks old	Active	1	-77.628046	36.457259
NO-19-02	Pine	Active (small chicks)	1 chicks 8 weeks old	Active	1	-77.667706	36.485407
NO-19-03	Hardwood	Active (incubating)	empty failed hardwood	Active	0	-77.797717	36.506323
ME-19-01	Pine	Inactive (poor condition)	empty side falling out	Inactive		-78.289414	36.606612
ME-19-02	Hardwood	Inactive	empty hardwood	Inactive		-78.232699	36.599682