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# **AN ASSESSMENT OF THE BALD EAGLE POPULATION ALONG CLAYTOR LAKE, VIRGINIA**

January, 2008

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## **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-dephenyl-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 an 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 560 pairs in 2007 (Watts and Byrd 2007). 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.

### **Objectives**

The objectives of the eagle survey of Claytor Lake were 1) to document the status, distribution and productivity of nesting pairs in association with Claytor Lake and

associated river corridors and 2) to evaluate forested habitats for Bald Eagles within the drainage.

## **METHODS**

### **Study Area**

The survey area included the New River drainage between Interstate 81 and Interstate 77 in Pulaski County, Virginia. The focal water bodies included the spillway below Claytor Dam, Claytor Lake above the dam to Interstate 77, and tributaries of the lake.

### **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 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 9 April, 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 16 May, 2007.

### **Habitat Survey**

All land within the survey area was evaluated with respect to suitability for Bald Eagle nesting and foraging habitat. Habitat patches were evaluated based on the observer's experience with Bald Eagles within the mid-Atlantic region. For nesting, Bald Eagles require large trees within protected lands in close proximity to shoreline foraging areas. Within inland reservoirs, eagles tend to nest near the dam where the outfall

contributes to prey availability and/or near the headwaters where development and boat traffic tends to be reduced.

## **SURVEY FINDINGS**

### **Bald Eagles**

A single active, Bald Eagle nest was discovered below Claytor Dam. This location is typical of inland reservoirs. The nest appeared to be a first-year nest positioned in the top crotch of a hardwood. An adult was incubating on 9 April and a second adult was observed further up the reservoir. The nest was empty with no adults present on 16 May. Bald Eagle pairs have a relatively low success rate during their first year.

#### **NEST: PU-07-01**

<b>Nest Code</b>	<b>County</b>	<b>Topo Quad</b>	<b>Active Territory</b>	<b>Active Nest</b>	<b>Chicks Produced</b>
PU-07-01	Pulaski	Radford S.	Y	Y	0

#### Nest Location

This nest is located just below Claytor Dam along the northwest shoreline of the New River. The tree is positioned within a low floodplain within 40 m of the shoreline. This nest is downslope of a house and both visible and accessible from the water. The tree is even height with the surrounding trees.

#### Nesting Activity

*Bird Activity* – On 9 April, 2007 a single adult was present at the nest in incubating posture. A second adult was observed to the west along the reservoir perched on the shoreline west of the town of Tinytown. On 16 May, 2007 the nest was empty with no adults attending indicating that the nesting attempt had failed.

*Nest Condition* – Nest structure is of small to moderate size. On 9 April, 2007 the nest was in good structural condition. The shallow construction and ragged appearance suggests that the nest was newly built. The nest was lined and had a well-formed cup.

#### Nest Substrate

*Substrate Type* – Nest was built in a live hardwood.

*Nest Position* – Nest is positioned in a top crotch near the upper crown of the tree. Nest tree is on a low floodplain and even height to the surrounding trees in the stand. Sky exposure was more than 70%.

*Substrate Condition* – Nest tree is thin with a narrow crown but appears to be in good health with no significant crown damage.

### Potential Disturbance

Nest is easily visible before leaf out from an occupied house on the adjacent bluff. Nest is directly accessible on the ground from the house. Nest is visible and accessible from the waterway and is directly across from a dirt put in.

*Photo of Nest PU-07-01 facing north from the New River.*





*Aerial photo of Nest PU-07-01 facing toward the north shoreline of the New River.*



*Aerial photo of Nest PU-07-01 facing toward the north shoreline of the New River.*





## Bald Eagle Habitat

Claytor Lake contains a significant number of forest patches that have the potential to support both eagle nesting and foraging. Realistically, based on reservoir size and current state of development, it is unlikely that the water body could support more than 2 breeding pairs. Eagle nesting within the drainage could be further complicated by the amount of recreational boating during the later portion of the breeding season.

A total of 44 forest patches containing more than 1,610 ha were delineated during the aerial survey of 9 April that could provide either bald eagle nesting substrate, foraging substrate or both (Figure 1a-d, Table 1). The drainage still contains a great number of older oaks and white pines that are preferred nesting substrates by Bald Eagles within inland areas of Virginia.

Figure 1a.

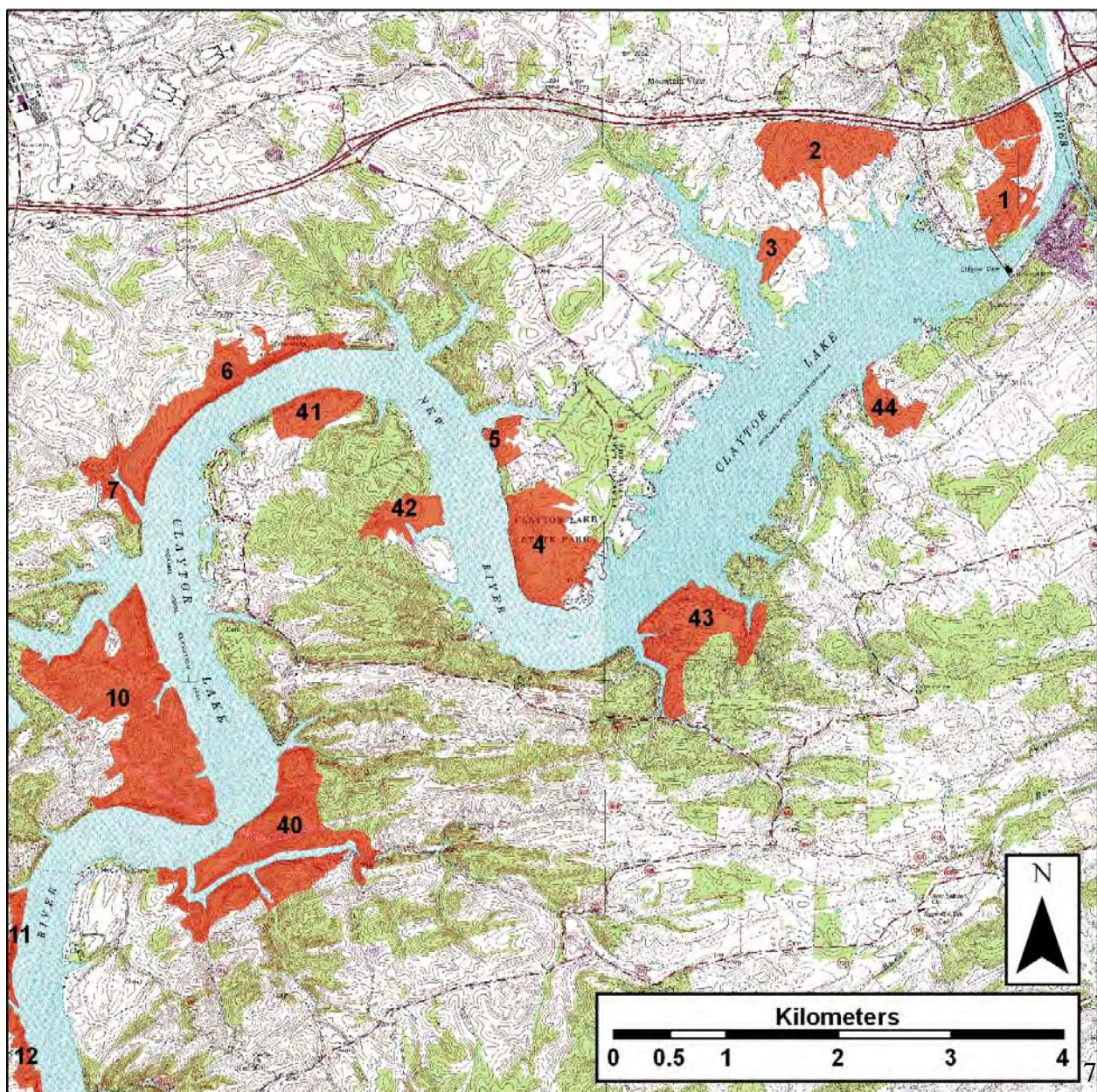




Figure 1b.

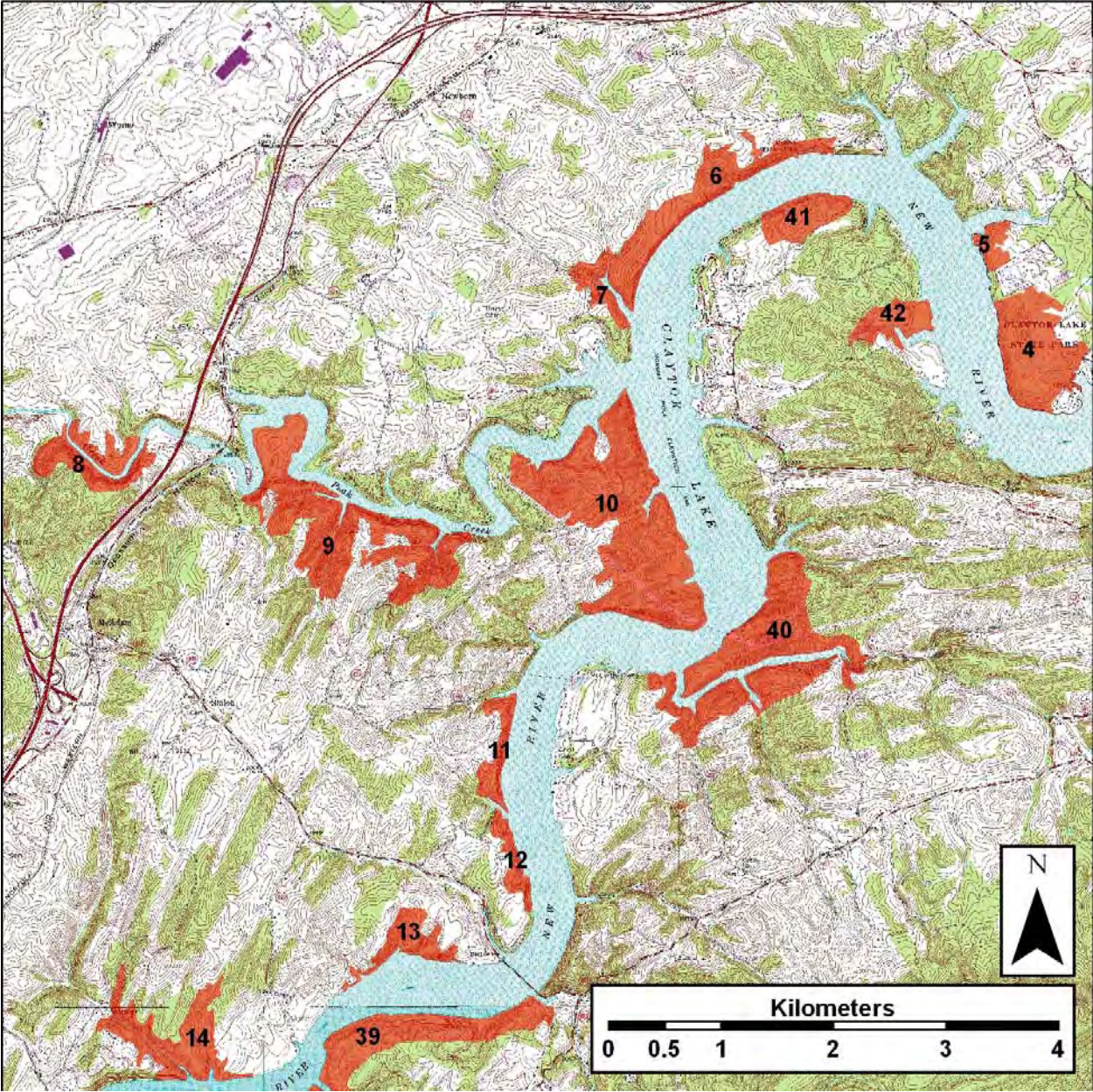
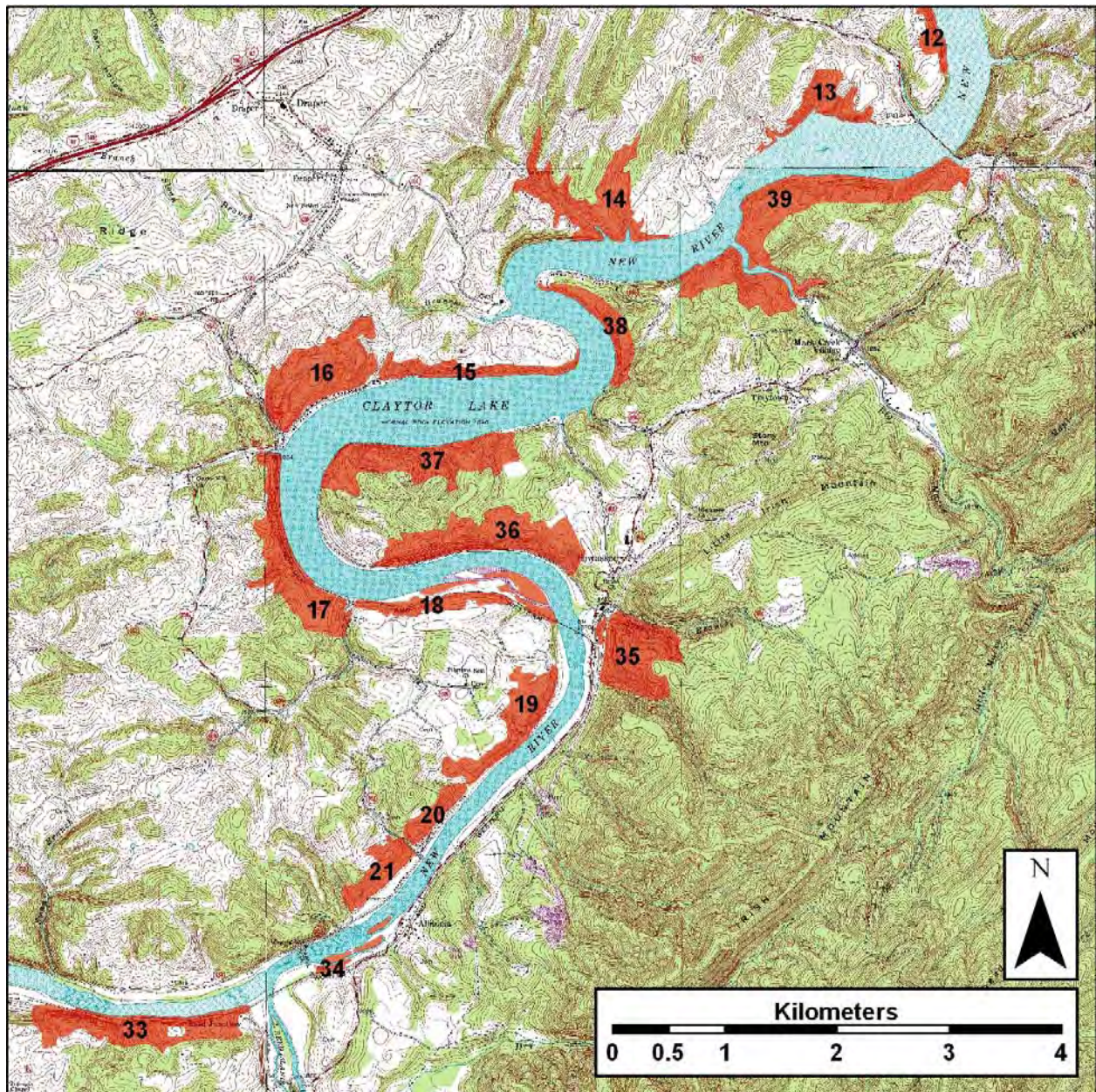




Figure 1c.





This topographic map illustrates the Colorado River and the Cienega Grande Wetlands area. The river is shown in blue, winding through the landscape. Various wetland sites are marked with red numbers: 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, and 33. The map features contour lines indicating elevation, a north arrow in the bottom right corner, and a scale bar labeled 'Kilometers' ranging from 0 to 4. The area is labeled 'Colorado River' and 'Cienega Grande Wetlands'.



Table 1. Summary of aerial observations for patches with potential to provide habitat for bald eagles on Claytor Lake.

Patch	Perimeter (m)	Area (ha)	Nest Potential	Foraging Potential	Observations
1	5970	42.8	good	good	Patch of hardwoods with scattered older trees suitable for nesting substrate. Patch grades down slope to shoreline and supports perch trees for foraging.
2	4460	51.4	moderate	none	Oak forest patch and tree line behind pasture. Patch supports potential nest trees but adequate shoreline perch trees for foraging not present.
3	1534	10.7	moderate	moderate	Oak forest patch with potential nest trees. Patch quality has been reduced by houses.
4	4477	57.4	moderate	very good	Claytor Lake Park. Forest patch containing old oaks and hardwoods with scattered white pines. Very good nest trees and perch trees for foraging along shoreline. Recreational trails through habitat and along shoreline may cause too much disturbance for regular use in summer.
5	1757	8.8	moderate	moderate	Bluff behind residential development. Patch supports old oaks and hardwoods with potential nest trees and some good perch trees along shoreline.
6	6922	51.3	good	good	High bluffs with cliffs supporting old hardwoods with good quality nest trees and foraging perches. Habitat quality is good.
7	3618	18.6	good	limited	Ravine with old oaks along slopes. Good potential nest trees with protected recesses.
8	6379	32.6	good	good	Gorge along creek with old oaks and scattered white pines. Good potential nest trees and perch trees along water. Site is protected from disturbance.
9	13681	111.2	good	good	Patch with old oaks and scattered white pines along slope. Good potential nest trees and perch trees along water. Good quality habitat.
10	9836	158.4	good	good	Oak forest block supporting very good stand of potential nest trees and perch trees along water. Very good habitat quality.
11	3110	15.5	limited	limited	Thin forest buffer along water supporting primarily good perching trees. Some potential nest trees but primarily foraging patch.
12	2494	11.5	limited	limited	Thin forest buffer along water supporting primarily good perching trees. Some potential nest trees but primarily foraging patch.
13	4291	20.6	limited	moderate	Oak forest patch with scattered white oak. Good protected edge along pasture with potential perch trees for foraging.
14	7109	46.9	limited	limited	Patch of scattered older oaks and hardwoods. A few trees may be potential nest trees. Site has limited potential for nesting and foraging.
15	4362	19.0	limited	good	Low floodplain forest area with large sycamores along the shoreline for foraging and several sycamores with potential as nest trees.
16	3944	50.9	moderate	none	Forest block behind houses. Some scattered trees that are potential nest trees. No foraging habitat.

Table 1. – continued.

Patch	Perimeter (m)	Area (ha)	Nest Potential	Foraging Potential	Observations
17	5014	45.7	good	good	High bluff with scattered hardwoods and white pines. Patch has good perch and nest trees with a good position on the landscape. Behind is a patch of older trees scattered over pasture. Good potential, isolated nest trees. No foraging habitat.
18	7318	25.6	good	good	Embankment above railroad track with large scattered hardwoods. Site has good potential trees for nesting and for foraging.
19	4186	31.4	limited	none	Bluffs above roadway and houses with large hardwoods and scattered pines. This patch is removed from shoreline and although has trees that could support nesting is marginal due to location and housing.
20	1746	10.8	limited	none	Bluffs above roadway and houses with large hardwoods and scattered pines. This patch is removed from shoreline and although has trees that could support nesting is marginal due to location and housing.
21	2429	17.1	limited	none	Habitat patch supporting some potential nest trees but of limited value due to location. No foraging habitat.
22	3496	6.1	limited	good	Floodplain farm with band of large sycamores. Limited potential for nesting but good foraging substrate.
23	3983	28.1	good	good	High bluff with large older hardwoods for nesting and some perch trees along shoreline.
24	4706	28.8	moderate	moderate	Bluff with some older hardwoods that have potential as nest trees. Some limited foraging perch trees along shoreline.
25	3186	25.5	limited	moderate	Bluff with extensive forest extending down to shoreline. Trees are not of large enough stature for nesting but may provide some foraging perch substrate.
26	2720	19.7	limited	good	Bluff over water with good perching trees for foraging. Patch has very few potential nest trees.
27	3301	9.6	good	good	Island with good forested habitat surrounded by narrow channel. Patch has good potential nest trees and good perching trees for foraging.
28	1692	3.0	limited	good	Narrow floodplain forest with larger sycamores. Good foraging substrate but few potential nest trees.
29	4860	36.9	moderate	moderate	High bluff with older hardwoods. Scattered older trees that have potential for nesting substrate. Trees extend down to water and provide good foraging perches.
30	4726	18.1	good	good	Carter Island and adjacent bluff have large trees suitable for both nesting and foraging.

Table 1. –continued.

Patch	Perimeter (m)	Area (ha)	Nest Potential	Foraging Potential	Observations
31	6138	45.9	good	good	High forested bluff with scattered old hardwoods for nesting extending down to shoreline with good perch trees for foraging.
32	5144	18.3	good	good	Narrow floodplain forest with larger sycamores along shoreline and scattered white pines in uplands. Good number of potential nest trees and perch trees along shoreline for foraging.
33	5441	44.1	good	good	High bluff above road with good hardwoods with potential for nesting on bluff and hardwoods along the shoreline for foraging.
34	2608	5.3	good	good	Low floodplain forest area with large sycamores along the shoreline for foraging and several sycamores with potential as nest trees.
35	3464	40.2	moderate	limited	High bluff with scattered older hardwoods and white pines suitable for nesting substrate but close to houses.
36	5447	53.3	moderate	moderate	High bluff with good older oaks and white pines high on the slope that are suitable for nesting. Limited trees down to shoreline for foraging.
37	4951	50.7	good	limited	High bluff with good oaks for nesting. Limited trees along shoreline and separated from channel by sandbar.
38	3055	18.4	limited	moderate	High bluff extending out to peninsula. Upper area logged out with only younger trees remaining. Limited potential for nesting substrate. Trees along shoreline are good for foraging perches.
39	10201	91.4	moderate	moderate	High bluff along shoreline. Trees on bluff are of smaller stature and not great for nesting. Further up along shoreline there is a section of older oaks and white pines that are suitable for nesting. Trees along the shoreline are adequate for foraging.
40	12565	110.8	v good	very good	Deep ravine with large oaks and white pines in good setting for nesting. Shoreline lined with trees for foraging. Good, isolated area for nesting and foraging.
41	2103	23.4	moderate	moderate	Patch with scattered large oaks that are potential nest trees. Ample trees along shoreline for foraging. Patch has some embedded houses that may limit use.
42	2713	19.2	moderate	moderate	Cove forests with large sycamores that are adequate for nest trees. Patch is sandwiched between neighborhoods that may limit use.
43	5478	58.6	good	good	Patch with extensive forested shoreline moving up two coves and supporting older hardwoods with potential for nest substrate. Good perch trees for foraging.
44	2353	16.8	good	good	High bluff supporting oaks and white pines suitable for eagle nests. Shoreline lined with trees for foraging habitat.