

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6669 Short Lane
Gloucester, VA 23061

March 4, 2003

Mr. Alec Gould, Superintendent
Colonial National Historical Park
National Park Service
P.O. Box 210
Yorktown, Virginia 23690

Re: Jamestown 2007 Project Construction,
Jamestown Island, James City County,
Virginia

Dear Mr. Gould:

This document transmits the U.S. Fish and Wildlife Service's (FWS) biological opinion based on our review of the proposed infrastructure improvements at Jamestown Island for the Jamestown 2007 celebration in James City County, Virginia and their effects on the bald eagle (*Haliaeetus leucocephalus*) and the sensitive joint-vetch (*Aeschynomene virginica*), both Federally listed threatened. This biological opinion is submitted in accordance with Section 7 of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). On September 29, 2002, we received notification from the Association for the Preservation of Virginia Antiquities (APVA) indicating they would partner with the National Park Service (NPS) during formal consultation under Section 7 of the ESA and that they would abide by the terms and conditions detailed in the biological opinion. NPS's October 29, 2002 request for formal consultation was received on October 30, 2002.

This biological opinion is based on information provided in the biological assessment, meetings, electronic mail, telephone conversations, field investigations, and other sources of information. A complete administrative record of this consultation is on file in this office. This letter also provides the separate comments of the Service and the Department of the Interior pursuant to the Fish and Wildlife Coordination Act of 1958 (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), which are included following the biological opinion.

I. CONSULTATION HISTORY

Significant events related to this action, occurring both before and after formal consultation was initiated, are listed chronologically in Appendix A.

II. BIOLOGICAL OPINION

DESCRIPTION OF PROPOSED ACTION

To commemorate the 400th anniversary of Jamestown, NPS has developed a plan to expand visitor facilities, enhance research and educational activities, and further protect the archival materials at Colonial Historical National Park. Following is an overview of specific activities this will entail. Drawings depicting these facilities are found in NPS's *Biological Assessment for Proposed new Construction and Increased Visitor Use Impacts at the Jamestown Island Project Site*, dated October 2002.

NPS proposes to construct a 19,000 square foot New Visitor Center/Educational Facility, composed of multiple single-story buildings, in the existing Visitor Center parking lot, and located immediately outside of the 750 foot primary protection zone around eagle nest VAJC01-01. An associated restroom will be constructed. NPS also proposes to construct a Pedestrian Bridge from the New Visitor Center to the Observation Building, which is located outside of the 1320 foot secondary protection zone around the eagle nest.

NPS proposes to construct an elevated boardwalk hike/bicycle path which will extend south from Neck of Land parking lot over the trace of the old ferry road to the Back River and come no closer than 950 feet to the eagle nest. Where the boardwalk meets the river, NPS further proposes the construction of a 14 foot high, 14 foot wide, Boardwalk Bridge over the Back River. The bridge will also be approximately 950 feet from the nest.

NPS proposes to construct three new boat docks, for NPS visitor use only, at Neck of Land, Powhatan Creek Overlook, and Jamestown Island, the latter of which will be located approximately 1000 feet from the eagle nest. Two boat taxis will run between the three docks approximately every 20 minutes, from 10 am to 5 pm. Tour boats, running 1.5 hour trips, will also operate from one of the docks. Elevated walkways to the boat docks will also be constructed.

NPS proposes to construct the 7,500 square foot Ludwell Exhibit Facility, which will be located approximately 1,100 feet from the eagle nest. An associated restroom will be constructed.

NPS proposes the construction of the APVA and NPS Collections and Research Facility, which entails the 8,000 square foot expansion of the existing APVA Rediscovery Center, located approximately 1,100 feet from the eagle nest.

NPS proposes the construction of a 2,000 square foot Gateway/Orientation Facility, with associated

parking for 265 vehicles, at Neck of Land. NPS proposes to modify and downsize the existing 29,000 square foot Visitor Center to a 5,000 square foot Observation Building. Associated restrooms will be constructed near these buildings. NPS proposes to remove the Entrance Booths and install a gate at the entrance to Jamestown Island. All of these actions occur outside of the 1,320 foot radius secondary protection zone of the eagle nest.

The "action area" is defined as all areas to be affected directly or indirectly by the federal action and not merely the immediate area involved in the action. FWS has determined that the action area for this project is delineated by the park boundary on the north and west (with a small outpocketing around the northern extent of tour boat up Powhatan Creek), and by the path of the Jamestown Explorer or New Tour Boat around the rest of the island (Figure 1). The action area includes all land, water, and airspace within 1,320 feet of eagle nests VAJC-0101, VAJC01-05, and VAJC87-01.

STATUS OF THE SPECIES RANGEWIDE

Species Description – The bald eagle is a large bird of prey with a wing span of 6½ feet. It is found primarily near the coasts, rivers, and lakes of North America. The Chesapeake Bay bald eagle population was listed as endangered in 1978. The Chesapeake Bay recovery region encompasses Virginia, Delaware, Maryland, the eastern half of Pennsylvania, the panhandle of West Virginia, and the southern two-thirds of New Jersey. The Chesapeake Bay Recovery Team prepared a Recovery Plan that is pertinent to this opinion (USFWS 1990).

On August 11, 1995, the bald eagle population in the Chesapeake Bay was reclassified from endangered to threatened due to increasing numbers and range expansion (50 CFR Part 17 36000-36010). In the Chesapeake Bay Recovery Region, delisting requires (1) a nesting population of 300 to 400 pairs with an average productivity of 1.1 eaglets per active nest, sustained over 5 years and (2) permanent protection of sufficient nesting habitat to support 300 to 400 bald eagle pairs. Additionally, enough roosting habitat to accommodate population levels commensurate with increases throughout the Atlantic region resulting from increased productivity is required (USFWS 1990). Since 1992, the criteria of the number of breeding pairs and productivity per nest (300, 1.1, respectively) have been met. However, there has been little permanent protection of nesting habitat within the Chesapeake Bay region. Over 80% of the bald eagle nests in Virginia and Maryland are located on private and corporate lands.

In Virginia, the bald eagle breeding population has steadily increased from an estimated low of approximately 32 pairs in the late 1960s to 360 known nesting pairs in 2002, with approximately 30 pairs suspected to be nesting in the Piedmont, which is not surveyed regularly. Habitat loss now poses a greater threat to the bald eagle since its preferred habitat is where most of the human population growth is occurring in the United States.

The Service announced a nation-wide "Intent to Delist" proposal in July 1999, followed by a notice for

public comment in the Federal Register (Proposed Rule, Volume 64, No. 128; Tuesday, July 6, 1999). No further action has been taken, and the species is still listed as of the date of this Biological Opinion.

Life History/Populations Dynamics – Unless otherwise noted, the information in this section was taken from VDGIF (1994) and Watts *et al.* (1994).

Bald eagles breed at four to five years of age, the same time they develop their white head and tail. Adult birds generally mate for life, establishing nesting territories that they return to each year. Nesting pairs may remain near their territory year-round, particularly toward the southern range of the species. In addition to the resident breeding population, Virginia has five bald eagle “concentration areas” where sub-adults and non-breeding adults congregate. These areas are used for foraging, perching, and roosting during one or more seasons of the year. There are no concentration areas near the action area.

During the day, eagles spend approximately 94% of their time perching (Gerrard *et al.* 1980, Watson *et al.* 1991). During the breeding season, 54% of that time is spent loafing, 23% scanning for food or eating, and 16% nesting (Watson *et al.* 1991). Eagles prefer high perches in trees that rise above the surrounding vegetation to provide a wide view that faces into the wind (Gerrard *et al.* 1980). In Maryland, eagles used shoreline that had more suitable perch trees, more forest cover, and fewer buildings than unused areas at all times of the year (Chandler *et al.* 1995). Chandler *et al.* (1995) found that distance from the water to the nearest suitable perch tree was shorter for areas used by bald eagles than areas that did not receive eagle use. In their study, eagles tended to perch within 164 feet of the shore. They recommended that shoreline trees greater than 7.87 inches in diameter at breast height and dead trees not be removed. Eagles often locate prey from a shoreline perch, and hunting forays from perches appear to be more successful than those initiated from flight (Jaffee 1980). Gerrard *et al.* (1980) found that after a successful fishing trip, eagles flew to a low perch to feed; these perches were less than 33 feet above the water and were well below the level of neighboring tree tops. Clark (1992) observed that, within the Powell Creek concentration area on the James River, eagles perched in shoreline trees, flew out to pick up fish, and then returned to the perch to eat.

Bald eagles are opportunistic foragers, preying on fish, birds, and small mammals, as well as scavenging carrion. In the summer, fish are the primary component of the diet. Eagles in Virginia feed on shad, catfish, carp, menhaden, perch, and eels depending on their seasonal availability. In the fall and winter, eagles shift their foraging to waterfowl and supplement their diet to a greater extent with carrion. Because the main diet of bald eagles inhabiting the Chesapeake Bay and its tributaries during the summer is fish, the majority of birds are likely to be present along the shoreline at any given time (Wallin and Byrd 1984). Foraging is a key behavior that influences daily and seasonal activity budgets (Watson *et al.* 1991). Foraging patterns may be strongly influenced by tidal fluctuations. Several studies have found that eagles foraged much more than expected during low tides and less than expected at high tides (McGarigal *et al.* 1991, Watson *et al.* 1991). In King George County, Virginia,

overall bald eagle foraging frequency was highest from 4:35 to 6:00 a.m., with a small decline from 6:00 to 10:00 a.m. At 10:00 a.m. foraging decreased further and then remained the same until 6:00 p.m. when it decreased rapidly (Jaffee 1980).

Watts and Whalen (1997) conducted boat and eagle observations from three pier locations within the Powell Creek eagle concentration area on the James River during the summer of 1997. Peak eagle foraging began at dawn and continued until 8:30 a.m. After 8:30 a.m., eagle foraging activity declined and remained fairly stable until 11:00 a.m., when the amount of foraging decreased rapidly and remained low for the rest of the day. Between 6:00 and 8:30 a.m., 55% of morning foraging was documented. By 9:30 a.m., 70% of foraging had occurred. By 10:00 a.m., 79% of foraging had occurred, and 95% of all morning foraging activities had occurred by 11:00 a.m.

During the late afternoon/early evening, bald eagles fly inland to roost for the night. Most summer eagle roosts in the Chesapeake Bay region were found in greater than 100-acre forest blocks and were further from human development than random sites (Buehler *et al.* 1991b). Ninety-five percent of the roosts were within 2,362 feet of water and 50% were at least 2,231 feet from the nearest building (Buehler *et al.* 1991b). Trees used for roosting were larger in diameter, taller, and more accessible from the air than other available trees (Keister and Anthony 1983, Buehler *et al.* 1991b). Another important attribute of communal roosts is proximity to food sources (Keister and Anthony 1983). Because food for eagles occurs in the water, suitable habitat along rivers is important. Clark (1992) found that, within the Powell Creek concentration area, distance to the roost was the most important habitat factor that influenced eagle distribution along the shoreline. Buehler *et al.* (1991b) determined that on the Northern Chesapeake Bay “. . . fewer than 2% of the random trees met the minimum habitat values of roost trees, indicating that suitable roost trees are scarce relative to other trees. This relative scarcity suggests that if shoreline forest is removed indiscriminately, roost habitat could become limiting to the bald eagle population in the future.”

Status and Distribution – Historically, bald eagles were plentiful along major river systems and coastal areas in the United States and Canada. However, habitat loss associated with human settlement, and later, the use of persistent pesticides (such as DDT) for crop management, resulted in a dramatic decline in eagle populations. By the late 1960s, most breeding populations had been decimated by eggshell thinning and associated low productivity. Since the nationwide ban on most persistent pesticides, bald eagle populations have experienced gradual recovery in both productivity and total numbers.

Although the bald eagle has rebounded over the past 15 to 20 years, current patterns of habitat loss in the Chesapeake Bay region are likely to eventually halt or even reverse this recovery. Shoreline development throughout the Chesapeake Bay is reducing available habitat and poses the single greatest threat to the eagle population. Nesting, roosting, and foraging habitat is being lost to shoreline development for housing, business, industry, recreational facilities, public utilities, and transportation. Conversion of woodlands to agricultural fields and timber harvesting is also resulting in the loss of eagle

habitat. As the human population along these shoreline areas continues to grow, more undisturbed wooded habitat used by bald eagles will be permanently altered. In addition, water-based recreation in the Chesapeake Bay region has increased dramatically since the 1970s, resulting in disturbance to eagles in breeding, roosting, and foraging areas. Between 1992 and 1995, the population in Virginia increased 1.5% each year and boat registration increased 7% during that time (J.R. Davy, Virginia Department of Conservation and Recreation, pers. comm. 1996).

Buehler *et al.* (1991b) stated, “We assume there is an upper limit to the number of eagles that can be supported by any stretch of undeveloped shoreline. Thus, as shoreline continues to be modified, we believe that the length of remaining undeveloped shoreline may become the limiting factor for some eagle populations, including the Chesapeake population.” Bald eagles in Virginia will maintain sustainable numbers only if there is adequate habitat for nesting, roosting, and foraging free from human disturbance. Management to preserve and protect these shoreline areas is essential to the continued growth and recovery of the Chesapeake Bay’s nesting, summering, and wintering bald eagle population.

Chronic human activity may result in disuse of areas by eagles. Buehler *et al.* (1991b) found that bald eagle use of shoreline was inversely related to building density (magnitude of effect was greatest in summer) and directly related the development set back distance. Clark (1992) concluded that “increased numbers of waterfront buildings and decreased amounts of shoreline woodland . . . negatively affect eagle shoreline use.” Clark (1992) found that eagle numbers decreased with increased numbers of buildings and amount of medium duty roads. Buehler *et al.* (1991a) found that in the northern Chesapeake Bay, 76% of shoreline areas may now be unsuitable for eagle use because of the presence of development within 1,640 feet of the shoreline. Up to an additional 10% of the shoreline was found to be unsuitable at times because of boat and pedestrian traffic. When shoreline is developed, it is irretrievably lost as eagle habitat (Buehler *et al.* 1991b). Human activity resulting in even temporary disruption of the bird's environment represents a major source of potential disturbance in many eagle populations (McGarigal *et al.* 1991, Stalmaster and Kaiser 1998). Human activity in perching areas can interrupt feeding and cause birds to relocate (Fraser 1988, Stalmaster and Kaiser 1998). Watts and Whalen (1997) examined eagle density as a function of human presence and their results suggest that the presence of people had a negative effect on shoreline use by eagles. Watts and Whalen (1997) stated that “. . . it is clear that eagles avoid shoreline segments that regularly have people within 100 m [328 feet] of the water.” Buehler *et al.* (1991b) seldom observed eagles on the northern Chesapeake Bay within 1,640 feet of human activity and found that the birds rarely used developed areas or areas frequented by people on foot. During the summer, birds on the northern Chesapeake Bay flush, on average, when humans get within 577 feet (Buehler *et al.* 1991b). Once birds are disturbed, they do not return to the area until several hours after the disturbance has occurred and only when the disturbance no longer persists (Stalmaster and Newman 1978, Stalmaster and Kaiser 1998).

In addition to human activity, removal of shoreline vegetation results in disturbance to eagles and loss of

habitat. Clark (1992) found that within the Powell Creek concentration area on the James River, eagle abundance increased with increases in woodland width (defined as maximum width of woodland in each sampling plot measured in meters inland from the shore), snags (defined as number of standing dead trees over five meters in height on the shore of each sampling plot), and woodland length (defined as maximum length of woodland in each sampling plot measured in meters along the shoreline), which are indicative of the amount of forest habitat available. These three variables indicated lack of development, presence of a vegetation screen from human activities, and the presence of perching habitat. Removal of tall, large diameter trees will decrease the amount of perching and roosting habitat available (Buehler *et al.* 1991b). Luukkonen *et al.* (1989) recommended maintaining shorelines with forested buffers at least 328 feet wide. In addition, the buffer should have a minimum of one tree per 820 feet of shoreline that is at least 15.7 inches in diameter at breast height, is accessible to eagles, and contains suitable perching limbs. They also recommended conserving trees greater than or equal to 23.6 inches in diameter at breast height.

It has been documented that eagles are more tolerant of sounds when the sources were partially or totally concealed from their view (*e.g.*, Stalmaster and Newman 1978, Wallin and Byrd 1984). Strips of vegetation that reduce line-of-sight will allow closer presence of humans and provide perching and roosting trees (Stalmaster and Newman 1978). Stalmaster (1980) recommended restricting land activities 820 feet from eagles perched in shoreline trees to protect 99% of the birds. He suggested that boundaries could be shortened to 246 to 328 feet in width if at least 164 feet of this zone contains dense, shielding vegetation.

Feeding behavior of bald eagles can be disrupted by the mere presence of humans (Stalmaster and Newman 1978, Stalmaster and Kaiser 1998). Early morning human activities are potentially the most disruptive to eagle foraging activity (McGarigal *et al.* 1991, Stalmaster and Kaiser 1998). Disturbance may result in increased energy expenditures due to avoidance flights and decreased energy intake due to interference with feeding activity (Knight and Knight 1984, McGarigal *et al.* 1991, Stalmaster and Kaiser 1998). “The difference between the presence of a species when food is available versus the ability of that species to utilize the food is important. Whereas scavengers might be present in an area and appear to be unaffected by human activity, closer inspection would be required to determine whether the individuals are actually able to feed on that food” (Knight *et al.* 1991). Camp *et al.* (1997) found that wildlife responds to disturbance physiologically before responding behaviorally. They stated that heart rate increases and attention is diverted to human activities at a distance greater than that which actually causes the wildlife to flush. Knight *et al.* (1991) examined winter bald eagle concentration areas in Washington and found that when anglers (not in boats) were present, fewer bald eagles were feeding and the eagles shifted their foraging from early morning to late afternoon. “. . . The presence of anglers disrupted feeding, which reduced energy intake and increased energy expenditure through avoidance flights. The ultimate effect of such disturbances on energy budgets and individual fitness is unknown” (Knight *et al.* 1991).

Clark (1992) found that within the Powell Creek eagle concentration area, eagle abundance decreased

with increased numbers of “boat landings.” Boat landings were defined as “. . . piers, boat ramps, and sites where boats are regularly landed or anchored on the shore. . . .” Wallin and Byrd (1984) had similar findings within the Caledon concentration area on the Potomac River. Clark (1992) recommended that additional boat landings within or adjacent to the Powell Creek concentration area be discouraged, including those on tributary creeks of the James River.

Boating activity is likely to adversely impact eagles because it disrupts feeding activity and affects large areas in short periods of time (Knight and Knight 1984). Activities of recreational boaters are not predictable and thus are especially disruptive to birds (Wallin and Byrd 1984). McGarigal *et al.* (1991) found that eagles usually avoided an area within 656 to 2,952 feet of a single stationary experimental boat, with an average avoidance distance of 1,300 feet. During this time, eagles spent less time foraging and made fewer foraging attempts. McGarigal *et al.* (1991) recommend a 1,312 to 2,624 foot wide buffer around high-use foraging areas. Knight and Knight (1984) studied wintering eagles in Washington and found that a 1,148 foot wide buffer would protect 99% of birds perched in shoreline trees from a single canoe. However, eagles feeding on the ground were more sensitive to disturbance and required larger buffers. Knight and Knight (1984) found that a buffer of at least 1,476 feet would be required to protect 99% of eagles feeding on the ground from a single canoe.

Moving boats, as well as stationary boats, disrupt eagles. Buehler *et al.* (1991b) found that on the northern Chesapeake Bay, eagles were flushed by an approaching boat at an average distance of 575 feet. M.A. Byrd (College of William and Mary’s Center for Conservation Biology, pers. comm. 1989) has observed that when eagles are flushed by recreational boats from perch sites along the James River, they usually fly inland and cease foraging for at least several hours. Watts and Whalen (1997) studied boats and eagles on the James River. They found that nearly 25% of eagles perched on the shoreline flushed when their survey boat was within 656 feet of the shoreline. When the boat was within 328 feet of the shoreline, nearly 80% of the birds flushed. During shoreline surveys, they found that nearly 50% of all boats observed were within 656 feet of the shoreline and more than 35% were within 328 feet. Jon boats, jet skis, and bass boats tended to be closer to the shoreline than sport boats (defined as v-hull type boats). “The general distribution of boats relative to the shoreline . . . in combination with the observed flushing probabilities . . . suggest that a large number of boats may directly influence shoreline use by eagles” (Watts and Whalen 1997). Their data analysis suggested that the presence of boats within 656 feet of the shoreline has a significant negative effect on shoreline use by bald eagles.

Stalmaster and Kaiser (1998) studied wintering eagles on the Skagit River in Washington and found that eagles foraging on the ground were intolerant of humans within 300 m, especially in the morning and that the “. . . manner in which eagles responded to motorboats demonstrated that this activity was extremely disruptive to the population, even though only a small number of human were involved.” Luukkonen *et al.* (1989) studied non-breeding eagles in North Carolina and found “eagles and people tended to concentrate their activities on different portions of both lakes.” They estimated that boat densities of more than 0.5 boats/km² altered eagle distribution patterns. “Disturbance by boaters or others may negatively affect eagle energy budgets by causing unnecessary eagle movements and by

displacing eagles from foraging areas” (Luukkonen *et al.* 1989). Wood and Collopy (1995) studied breeding and non-breeding eagles on three lakes in Florida. They found a significant negative relationship between boat numbers and eagle numbers on one of the lakes. The other two lakes did not show this relationship, but did not receive as much boat traffic. Boat use was highest on weekends and eagle use was highest on weekdays. Moving boats seemed to be more disruptive than stationary boats. Boating activity reduced the number of eagles using the shoreline, increased the perching distance from the shoreline, and increased the flushing distance (mean flush distance was 174 feet).

Chemical poisoning and shooting are now less of a threat than in past years, but continue to cause loss of eagles. The Service, U.S. Environmental Protection Agency, and the states monitor pesticide-related eagle mortalities; restrictions on some types of pesticides have resulted from eagle mortalities. With increased petrochemical transport activities in the Chesapeake Bay region, the potential exists for eagles to come into contact with oil resulting from spills. Eagle deaths occasionally occur throughout the species’ range due to collisions with power lines or electrocutions at power poles. In Virginia, power companies have voluntarily agreed to place “perch guards” on many power poles that have a high risk of eagle electrocution.

Analysis of the Species Likely To Be Affected - The proposed action has the potential to adversely affect the bald eagle within the action area. The effects of the proposed action on the bald eagle will be considered further in the remaining sections of the this biological opinion.

The Service also provided comments on the sensitive joint-vetch for this project. Based on NPS’s adherence to recommended project modifications, which include avoiding the ferry road trace (appropriate elevation for sensitive joint-vetch and location of last known population), using alternative construction methods (the top-down method) designed to minimize impacts to marsh vegetation and soils, and designing (implementation began prior to October 2002) a non-native, invasive marsh vegetation monitoring and control plan, the Service has determined that the proposed action is not likely to adversely affect the sensitive joint-vetch and it will not be considered further in this consultation.

ENVIRONMENTAL BASELINE

Status of the Species Within the Action Area – Bald eagles are proliferating in and around Jamestown Island. Nest VAJC01-01 was discovered during the annual nesting surveys in March 2001. Two young were produced in the 2001 breeding season and one eaglet fledged in the 2002 season. The pair is also utilizing the nest this year (Rafkind, pers. comm. 2002), although it will not be known if they have produced eggs until the nesting surveys in March 2003. There are two other eagle nests on Jamestown Island (VAJC01-05 and VAJC87-01, both active in 2002 and 2003), but the only portion of the proposed action likely to affect them is the operation of the tour boats.

The eagles at nest VAJC01-01 probably moved into this busy area during the late fall of 2000, when levels of human activity are relatively low. According to the Bald Eagle Protection Guidelines for

Virginia (USFWS & VDGIF 2000), eagles usually prefer much less nearby human activity than the level at Jamestown Island. The guidelines recommend a 1,320-foot protection zone with minimal human disturbance around nests. The guidelines warn of the negative effects of boat traffic and loud noises. This eagle nest is approximately 600 feet from the only road onto Jamestown Island, with a clear line of sight to the road. Furthermore, the nest is approximately 600 feet from the visitors parking lot, with a limited line of sight view of traffic in the parking lot. Even though there is not much vegetation to block the eagles' view of the traffic, a marsh does separate the nest tree from the road and the parking lot. This marsh will serve to prevent access on foot any closer than approximately 400 feet. The nest is approximately 200 feet from Back River, the waterway that separates Jamestown Island from the mainland.

This particular pair of eagles appear to be used to some degree of human disturbance. In addition to the routine vehicle traffic, several NPS projects were completed during the winter of 2001. A water line replacement project was undertaken from September 2000 to February 2001, and equipment was staged in the parking lot approximately 600 feet from the nest. Many loud activities, such as the operation of dump trucks, excavators, backhoes, tractors, tampers, and jackhammers, were all used within 750 feet of the nest. Chain saws and payloaders were used to cut down and remove some trees around the parking lot in October 2000. Sewer lines were blown with an air compressor in October 2000. The Isthmus Bridge (approximately 1,400 feet from the nest but with a clear line of sight) was cleaned and painted during October and November 2000. Many trucks used to the road to complete other maintenance activities farther down the island throughout the fall and winter of 2000-2001. In the spring of 2001, NPS completed paving of the bridge and Visitor Center parking lot and chipped and sealed the surface of the road between the bridge and parking lot. NPS also staged timbers at the far end of the parking lot to repair/replace wooden bridges on Loop Road and the path to the Visitors Center.

NPS submitted an observation log of eagle behavior from March 14 to June 14, 2002. The log documented many instances of boat traffic in Back River, and vehicular traffic on Jamestown Island, with little reaction from the nesting eagles or their eaglets. Adult eagles appeared to be most aware of disturbance (both water and land) when eaglets were moving about and near fledging (when they are most vulnerable). Several times adult eagles were particularly agitated or vigilant when multiple jet skis passed the nest at the same time. These same eagles seemed relatively undisturbed by most noise, the visual combination of multiple jet skis (like a boat) may have been the disturbing factor. The adult eagles also appeared disturbed occasionally by particularly loud vehicles as they passed in the parking lot. Most events and vehicles causing the adult eagles to become agitated occurred when the eaglets were moving about and close to fledging.

Factors Affecting Species Habitat Within the Action Area – There are currently several activities that occur during the eagle breeding season which may be affecting eagle habitat in the area. Current boat traffic on Back River may reduce available foraging habitat and reduce the quality of nesting habitat. Vehicular traffic onto Jamestown Island and pedestrian visitors most likely also reduce the quality of

nesting habitat. Routine maintenance activities, such as tree removal or road repairs in the vicinity of the nest, may disturb the eagles.

EFFECTS OF THE ACTION

Beneficial Effects – Beneficial effects are those effects that are wholly positive, without any adverse effects. As defined, there are no beneficial effects in the proposed action.

Direct Effects – Increased activity at the New Jamestown Island Dock may directly or indirectly affect nesting eagles. New tour boats and construction of the three new docks will significantly increase water traffic. Presently, nesting eagles are acclimated to and tolerate existing levels of boat traffic on Back River. Increases in water traffic and general disturbance near the nest are types of activities that can cause eagles to abandon nests and/or offspring, prohibit a return the following year, and interrupt foraging and roosting behavior. Plans for multimodal access to Jamestown Island include boat taxis, which will begin no earlier than 10 am and run every 20 minutes, daily, until 4 or 5 pm. Taxis will leave Neck of Land dock, stop at Jamestown Island dock, stop at Powhatan dock, and pass Jamestown Island (and the eagle nest) again on the way back to Neck of Land dock. There will also be two new tour boats, which will begin daily operation no earlier than 10 am, and will depart from the Neck of Land dock for 1 to 2 hour trips around Jamestown Island. Tour boats will make 3 to 4 trips daily, from April to October. These boats are proposed to be similar in size and style to the Jamestown Explorer. The Jamestown Explorer may change its operation to leave from one of the new NPS docks or stop at one along its normal route. The increase in Park-related water traffic of approximately 48 trips (water taxis and tour boats) past eagle nest VAJC01-01 is likely to adversely affect nesting bald eagles by directly disturbing nesting eagles and indirectly by disrupting foraging opportunities on Back River.

Other disturbances beyond levels that have occurred in the past will also occur in the vicinity of nest VAJC-0101. Increased motorized vehicle (cars, buses, and small trucks) and pedestrian/bicyclist (over the new boardwalk) use will add levels of disturbance. Additionally, construction of the Ludwell Exhibit Facility and the Collections and Research Facility approximately 1,100 feet from the nest will occur during the breeding season. It is difficult to distinguish which, if any, of the above activities may cause harassment or harm of the eagles to the point of nest abandonment or injury/death to the eggs or young. Of the human activities within the vicinity of nest, boat activity will probably disturb the eagles the most (Watts, pers. comm. 2001).

First-year nesting pairs have a greater chance of abandoning a nest than pairs that have occupied a nest for several years (Watts, pers. comm. 2001). By the time construction begins, this pair will have used nest VAJC01-01 for at least three years. However, a significant increase in vehicular, boat, and pedestrian traffic is anticipated, and FWS believes these disturbances may cause the eagles not to return to the nest the year construction begins, or cause the adult pair to abandon the nest or the eaglets to jump out of the nest the first year the boardwalk or boat taxis are in use during the breeding season.

Indirect Effects – Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. More than five acres of mature forested habitat will be cleared to build the Neck of Land parking lot, Gateway Center, and accompanying elevated walkways on the northern side of the marsh. Clearing this area removes an important shoreline buffer between the eagles and human development. Also, this forested area could potentially have provided an alternate nesting area for the eagles if the activity on Jamestown Island caused them to abandon nest JC01-01 (Watts, pers. comm., 2003). Additionally, construction of the Bridge over Back River and the resulting slowing of boat traffic in the immediate area of the nest may reduce foraging habitat.

Interrelated and Interdependent Actions – An interrelated activity is an activity that is part of the proposed action and depends on the proposed action for its justification. An interdependent activity is an activity that has no independent utility apart from the action under consultation. In 2007, NPS anticipates a special anniversary celebration of unknown proportion, which will include large amounts of pedestrian and vehicular (land, air, or water) traffic, and other one-time events that cannot be foreseen this far in advance. NPS will conduct a separate environmental assessment and ESA consultation for this event.

CUMULATIVE EFFECTS

Cumulative effects include the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to Section 7 of the ESA.

There are non-federal activities that affect the eagles nesting at VAJC-0101. There is private land on Jamestown Island owned by the Association for the Preservation of Virginia Antiquities (APVA). Almost all of APVA's land is outside the primary protective zone of 750 feet; their road connection to the main road is the only APVA land within the primary zone. As stated above, there is only one road onto Jamestown Island, and APVA traffic numbers are included in the NPS traffic numbers. The nest is concealed from view from almost all of the APVA land. Some activities, such as occasional individual tree clearing within 1,320 feet (but outside 750 feet) of the nest are permitted during the nesting season, which runs from December 15 to July 15 in Virginia.

APVA maintains a helicopter pad approximately 1,300 feet from the nest. APVA estimates that helicopter flights occur about once a month. APVA has instructed the pilot to avoid coming any closer to the eagle nest than the landing pad and to observe a 1,000-foot vertical clearance from the nest.

Boat traffic on Back River and Sandy Bottom, most notably jet skis, will undoubtedly create noise and disturbances near the nest. Both boat traffic and visitor traffic may increase drastically following the

publicity generated for the actual 2007 celebration.

CONCLUSION

After reviewing the status of the bald eagle, the environmental baseline for the action area, the effects of the proposed action and the cumulative effects, it is FWS's biological opinion that the Jamestown 2007 project construction and visitor access activities, as proposed, are not likely to jeopardize the continued existence of the bald eagle. No critical habitat has been designated for this species, therefore, none will be affected.

III. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and federal regulation pursuant to Section 4(d) of the ESA prohibit the take of endangered and threatened species, respectively, without a special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by FWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns such as breeding, feeding, or sheltering. Harass is defined by FWS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the terms and conditions of this incidental take statement.

The measures described below are nondiscretionary, and must be undertaken by NPS so that they become binding conditions of its actions, for the exemption in Section 7(o)(2) to apply. NPS has a continuing duty to regulate the activity covered by this incidental take statement. If NPS (1) fails to assume and implement the terms and conditions or (2) fails to require any contractors to adhere to the terms and conditions of the incidental take statement, the protective coverage of Section 7(o)(2) may lapse. To monitor the impact of incidental take, NPS must report the progress of the action and its impact on the species to FWS as specified in the incidental take statement.

AMOUNT OR EXTENT OF TAKE

FWS anticipates take associated with bald eagle nest VAJC-0101 as a result of this proposed action. The incidental take is expected to be in the form of harassment of the adult pair, potentially to the level that would cause nest abandonment, and harassment or harm of the eaglets, potentially to the degree that would cause them to jump prematurely from the nest and die.

FWS will not refer the incidental take of the bald eagle for prosecution under the Migratory Bird Treaty Act of 1918, as amended (16 U.S.C. §§ 7 03-712), or the Bald and Golden Eagle Protection Act of 1940, as amended (16 U.S.C. §§ 668-668d), if such take is in compliance with the terms and conditions (including amount and/or number) specified herein.

EFFECT OF THE TAKE

In the accompanying biological opinion, the FWS determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

REASONABLE AND PRUDENT MEASURES

FWS believes the following reasonable and prudent measures are necessary and appropriate to minimize take of bald eagles:

- o Minimize harassment of eagles by construction.
- o Minimize harassment of eagles by pedestrian and bicycling visitors.
- o Minimize harassment of eagles by boat traffic.
- o Incorporate plans to further reduce pedestrian or boat traffic during the breeding season if monitoring shows that increased human use is negatively affecting breeding success.

TERMS AND CONDITIONS

To be exempt from the prohibitions of Section 9 of the ESA, NPS must comply with the following terms and conditions, which implement the reasonable and prudent measures described above and outline required reporting/monitoring requirements. These terms and conditions are nondiscretionary.

1. No external construction, staging, or maintenance activities within 1,320 feet of the nest shall occur during the eagle breeding season (November 15 to July 15) of any given year, with the exception of the Expanded Collections Storage and the Ludwell Exhibit Facility. Construction and maintenance activities within a completely enclosed building may occur during the breeding season. NPS may coordinate with FWS each year to determine when the eagles stop using the nest and to discuss beginning construction activities earlier than July 16.
2. The Expanded Collections Storage and the Ludwell Exhibit Facility may be constructed at any time, but staging may not occur north of, or closer to the eagles nest than the proposed Expanded Collections Storage and Ludwell Exhibit Facility.

3. During the breeding season, boat taxis and tour boat service will begin operation no earlier than 10:00 am, discourage visitors from making loud noises when passing within 750 feet of the nests, maintain a distance of at least 350 feet from eagle nests VAJC01-05 and VAJC87-01, and maintain the maximum distance from nest VAJC01-01 (the nest near the Visitor Center) that is safely possible.
4. NPS will monitor the nest weekly from November 15 to July 15 from the parking lot or the road to determine if the eagles are present. With binoculars or a spotting scope, look for the adult eagles standing in or on the nest or perching very close by. Monitor the nest for 30 minutes or until the nesting pair for nest VAJC-0101 is observed. Prior to incubation, monitoring should occur near dusk. After incubation begins, monitoring may be conducted at any time during the day. The report should state that eagles were present or absent. Monitoring shall begin the year construction begins on any structure within 1,320 feet of the nest and continue through the third year after visitors begin utilizing the boat taxis and boardwalk. Submit this report to FWS no later than July 31 of each year (for the breeding season ending 15 days prior). This and any additional information to be sent to FWS should be sent to the following address:

Virginia Field Office
U.S. Fish and Wildlife Service
6669 Short Lane
Gloucester, Virginia 23061
Phone (804) 693-6694
Fax (804) 693-9032

5. If, in any given year of monitoring, no eagles have been sighted around the nest by January, NPS shall notify FWS. Similarly, if eagles are documented around the nest, and then at any point during the breeding season NPS has reason to believe the eagles have abandoned the nest, FWS shall be notified immediately.
6. NPS will also monitor bicycle/pedestrian use of the boardwalk, boat taxi usage, and motorized vehicular traffic onto the island from November 15 to July 15 from the first year the new boat taxi service or pedestrian boardwalk is in use until the third year after the last of these two structures are built. Report shall include a separate monthly average of both daily weekend usage and daily weekday usage (example: Pedestrian use of boardwalk in January averaged 110 people per day on weekends and 45 people per day on weekdays). Report shall also include a monthly average of daily weekend and weekday number of boat taxi trips and vehicular traffic onto the island. This information shall be included in the nest monitoring report indicated in #4.
7. If monitoring indicates that increased boat, bicycle/pedestrian, or vehicular traffic has negatively

impacted the nest success of this eagle pair, for example, the pair abandons or chooses not to use the nest at all, NPS will consult with FWS to modify pedestrian, boat, and/or vehicular traffic to reduce impacts to acceptable levels. Acceptable levels are those which are not expected to deter the eagles from using nest VAJC-0101 or to cause nest abandonment or loss of chicks.

8. Jamestown Island Dock will be constructed at least 1000 feet away from the nest and neither boat taxis nor tour boats will be stored, maintained, or fueled at this dock. Tour boat operations shall not be conducted from this dock.
9. NPS will patrol the area with new structures routinely during the breeding season to ensure that visitors are not harassing the eagles by making loud noises or by walking off of the trail or boardwalk and closer to the nest. All NPS employees should be briefed so that they can correct visitors on the spot if they see visitors harassing the eagles. As long as all NPS employees can identify improper activities and have the authority and confidence to correct visitors, no special patrols are required.
10. Park will post "No Stopping" zones on Back River from Sandy Point to Jamestown Island Boat Ramp.
11. Care must be taken in handling any dead specimens of listed species that are found in the project area to preserve biological material in the best possible state. In conjunction with the preservation of any dead specimens, the finder has the responsibility to ensure that evidence intrinsic to determining the cause of death of the specimen is not unnecessarily disturbed. The finding of dead specimens does not imply enforcement proceedings pursuant to the ESA. The reporting of dead specimens is required to enable FWS to determine if take is reached or exceeded and to ensure that the terms and conditions are appropriate and effective. Upon locating a dead specimen, notify FWS at the address provided.

FWS believes that two adult eagles may be harassed to the level of nest abandonment and that one clutch of eaglets may be harassed or harmed to the level of death as a result of the proposed action. The reasonable and prudent measures, with their implementing terms and conditions, are designed to minimize the impact of incidental take that might otherwise result from the proposed action. If, during the course of the action, this level of incidental take is exceeded, such incidental take represents new information requiring reinitiation of consultation and review of the reasonable and prudent measures. NPS must immediately provide an explanation of the causes of the take, and review with FWS the need for possible modification of the reasonable and prudent measures and the terms and conditions.

IV. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs federal agencies to utilize their authorities to further the purposes of

the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to further minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

One of the two conditions specified in the Chesapeake Bay Bald Eagle Recovery Plan to achieve full recovery of the species for delisting is permanent protection of sufficient nesting habitat to support 300-400 bald eagle pairs and enough roosting habitat to accommodate population levels commensurate with increases throughout the Atlantic region. Despite the fact that this condition has not been met (Watts, 1999), the bald eagle will probably be delisted in the near future. Habitat degradation is the most serious threat to the eagle and the ESA is currently the only regulatory tool that specifically protects the habitat on which the bald eagle depends. Habitat loss in the Chesapeake Bay is likely to accelerate and eagle numbers may again begin to decrease. To help prevent this, FWS believes that Federal land holders should work with FWS to formulate and sign management agreements to protect eagle habitat on their lands in perpetuity. The FWS would be pleased to work with NPS to design such a management agreement.

With the exception of boat traffic, there is little recent information addressing how eagle behavior is affected by disturbance activities such as will occur at Jamestown Island. An opportunity exists at Colonial National Historical Park to conduct needed research in this area while simultaneously enhancing the Park's educational value to the public. Multiple video camera recordings could be used to correlate eagle behavior in the nest with activities around the nest (on the water, pedestrian bridge, and/or road). NPS could coordinate with the College of William and Mary, Center for Conservation Biology, to develop a plan that would efficiently answer the most important questions regarding this eagle pair and their reactions to activities around them. NPS could also use the video of the eagles to educate visitors. Because of the manipulation of equipment in and around the nest tree required to implement this plan, however, further consultation with FWS would be necessary.

V. REINITIATION NOTICE

This concludes formal consultation on the actions outlined in the initiation request. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

For this Biological Opinion, the level of incidental take is harassment of the adult pair to the level of nest

abandonment and possible death of one clutch of eaglets. If this level of take is reached, reinitiation of consultation is required.

VI. FISH AND WILDLIFE COORDINATION ACT

FWS is concerned about the impacts to more than five acres of forested habitat that will occur when the parking lot at Neck of Land is constructed. We reference Executive Order 13186 entitled, Responsibilities of Federal Agencies to Protect Migratory Birds (FR Vol. 66, No. 11, Jan. 17, 2001). This Executive Order states in part that federal agencies shall “support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions” and “restore and enhance the habitat of migratory birds, as practicable.” FWS recommends habitat restoration/enhancement to offset impacts to migratory birds and other fish and wildlife resources. Actions such as habitat restoration, reforestation, or establishment of vegetated buffers along field edges are some of many options that should be considered.

FWS appreciates this opportunity to work with NPS in fulfilling our mutual responsibilities under the ESA. If you have any questions, please contact Ms. Jolie Harrison of this office at (804) 693-6694, extension 208.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

Enclosures

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Appendix A. Consultation History

- 10-05-00 NPS's Colonial National Historical Park and the Association for the Preservation of Virginia Antiquities (APVA) request FWS attend meeting to discuss preparation of Development Concept Plan to guide infrastructure improvements for 2007 celebration of Jamestown settlement's 400th anniversary.
- 10-24-00 FWS, NPS, APVA, the National Oceanic and Atmospheric Administration (NOAA), the Virginia Department of Conservation and Recreation (VDCR), Division of Natural Heritage (DNH), the Virginia Department of Environmental Quality (DEQ), the Virginia Department of Historic Resources, the Advisory Council on Historic Preservation, Archaeological and Cultural Solutions, Inc., and Vanesse Hangen Brustlin, Inc.(VHB) attend scoping meeting at site.
- 10-25-00 FWS, NPS, and VHB meet at site and establish necessity of further consultation for sensitive joint-vetch if marsh is developed.
- 02-22-01 FWS, NPS, and VHB meet to discuss consultation procedures, timeline and sensitive joint-vetch issues.
- 02-28-01 NPS notifies FWS that the College of William and Mary, Center for Conservation Biology (CCB), has discovered new active bald eagle nest at project site during annual surveys.
- 03-30-01 FWS emails NPS recommended guidelines and timeline for biological assessment to include bald eagle, sensitive joint-vetch, and small whorled pogonia (*Isotria medeoloides*)
- 04-11-01 FWS issues a biological opinion to NPS entitled "Current NPS Operations at Jamestown Island" to address impacts to the bald eagles at the new nest numbered VAJC-0101.
- 06-11-01 NPS notifies FWS that DNH survey results indicate no small whorled pogonia at site.
- 06-22-01 FWS, NPS, APVA, Virginia Department of Game and Inland Fisheries (VDGIF), DNH, CCB, and VHB meet on site to discuss alternatives for infrastructure improvements and potential impacts to eagles of the proposed May 13, 2007 celebration.
- 07-03-01 APVA agrees to formally join NPS's Colonial National Historical Park during formal consultation under Section 7 of the Endangered Species Act.

- 08-01-01 DNH submits draft biological assessment (BA) on behalf of NPS and APVA.
- 08-20-01 FWS provides written comments on draft BA, via email, to DNH, NPS, and APVA.
- 08-27-01 FWS, NPS, DNH, APVA, and VHB meet on site to discuss draft BA, sensitive joint-
vetch, and boat traffic.
- 10-02-01 FWS, NPS, VHB meet to further discuss project alternatives, BA, and biological
opinion (BO).
- 3-28-02 FWS and VHB meet to discuss draft Environmental Impact Statement (EIS) and BA.
- 5-23-02 FWS and NPS meet to discuss draft EIS and BA.
- 8-29-02 NPS submitted eagle nest monitoring report to FWS.
- 9-20-02 FWS, NPS, DNH, VHB, and Carlton Abbott and Partners meet to discuss completion
of BA.
- 9-30-02 FWS receives letter from APVA indicating APVA will partner with NPS for
Jamestown 2007 Section 7 consultation and abide by terms and conditions of BO.
- 10-29-02 DNH submits BA on behalf of NPS and APVA and initiates formal consultation.

(Jolie Harrison: 2/20/01)

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bcc: Program Supervisor-ES, South, Region 5 (Jeff Underwood)
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Endangered Species Biologist, CBFO (Mary Ratnaswamy)
USFWS Law Enforcement, Richmond (Rick Perry)
USFWS Law Enforcement, Yorktown (Dan Hurt)
USFWS eagle coordinator (Jody Millar)
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