MANAGEMENT PLAN FOR
REMOVAL OF SEMI-FERAL PIGS FROM VICKSBURG NATIONAL MILITARY PARK

December 2009

BACKGROUND

Feral pigs (*Sus scrofa*) have a significant adverse impact on the environment and are a potential reservoir and vector of diseases transmittable to both humans and domestic livestock. They are prolific breeders and capable of breeding twice annually. Their rooting for food profoundly disrupts many natural vegetative communities, individual species populations, and natural ecosystems where they occur. Feral pigs will compete with native animals for food, especially acorn mast, the most notable competitors in Vicksburg National Military Park (VNMP) being white-tailed deer, turkey, squirrels, and chipmunks. The effects of feral pigs on park resources are multifaceted and result from their movements, habitat utilization, and food habits. Their actions are highly destructive to cultural resources in areas where historical significance focuses on unique terrain features and man-made structures such as earthen fortifications and trenchlines, as is the case in VNMP.

The population currently present in VNMP is the result of domesticated pigs escaping from a neighboring property. After completion of legal obligations to contact the owner about re-capture of the pigs (with unsuccessful results), and public notification of the escaped livestock, VNMP determined the need to take immediate action to preserve the park resources by controlling the semi-feral pig population through options examined in this plan.

VNMP's first sighting of a semi-feral pig population occurred in summer 2008, in an area of the park bounded by Confederate Avenue (inside the park) to the south, Sherman Avenue (outside the park) to the north, Thayer's Approach (Tour Stop 6) area to the east, and the Navy Memorial-*USS Cairo* area to the west.

At that time it was determined that the herd contained at least one boar, sow, and litter of piglets, and most frequently remained concentrated in an area just north of the tour road near Thayer's Approach and the park's firing range. After approximately 1-2 months of sightings, the pigs suddenly disappeared from park property, and were not documented again until August 2009. Again the pigs were sighted in the same area of the park, but their range had since expanded beyond Thayer's Approach to the east and behind the Cairo Restoration Shop to the west. Currently, the herd is estimated to contain 3-4 adults (both boars and sows), and at least two litters of piglets.

Park managers are most concerned with the pig's destructive effects on natural ecosystems, competition with native species, park aesthetics, staff safety, and the cultural and natural values of the park and its mission.

VNMP has incurred severe damage throughout the landscape caused by the constant rooting and digging of the feral pigs, tearing up and disturbing several manicured areas along north Union Avenue causing an unsightly viewshed for visitors and presenting an extreme safety hazard for maintenance mowing staff. And, although unseen from the tour road, rooting damage has occurred in the near-by moist, wooded areas, seriously threatening monuments, earthworks, and historic cemetery property. The presence of the semi-feral pigs also presents a potential safety concern for volunteers and hikers who have been working on and/or using the park's primitive trail in this section of the park.

Feral pig damage on north Union Avenue near Thayer's Approach (Tour Stop 6)

For all of these reasons, VNMP management strategy focuses on eliminating the adverse impact of feral pigs by eradicating the population through trapping and removal and/or humane dispatch, to effectively curb the detrimental activity of the pigs and prevent future irreversible damage.

PURPOSE AND NEED

VNMP, together with Vicksburg National Cemetery, encompasses more than 1,800 acres, and includes a landscape commemorated by more than 1,340 monuments, 16 miles of tour roads, and earthen fortifications and siege lines documenting the components of the Union and Confederate armies during the Siege of Vicksburg, a key military action and deciding factor of the outcome of the Civil War. It is this natural terrain, comprised of unique and ancient loess bluffs, which determined the important role of the city's position on the Mississippi River, and created an almost impenetrable defense for the Confederate Army. Even today the landscape boasts high ridgelines, bordered by steep ravines filled with thick tangle and scrub – still formidable enough to daunt present-day explorers of the park's interior as it did the most determined of the Union forces during the siege.

Today, the Vicksburg battlefield bears little resemblance to the landscape at the time of the siege, with management practices since the establishment of the park allowing parklands to be naturally reforested. Areas that were once cleared during the siege are now forested as a result of natural vegetative regeneration and plantings by the Civilian Conservation Corps (CCC) in the 1930s to minimize soil erosion. These areas now provide important wildlife habitat in a unique loess soil bluff environment, and a major green area within the Vicksburg city limits. Unfortunately, the area has also become a haven for several invasive species, both plant and animal, which have caused serious detrimental impacts across the significant historical landscape. These species have become prevalent in the park through encroachment and/or negligence from surrounding properties.

Faced with many challenges associated with the long-term management and maintenance of the park, VNMP recently completed a Cultural Landscape Report (CLR) and Environmental Assessment (EA) (October 2009)

to provide an assessment of the character-defining features of the landscape, document historic and existing conditions, and develop specific treatment recommendations to ensure the future protection of the park and its natural and cultural resources. Control of invasive species in VNMP is a major goal of the overall landscape rehabilitation, and future implementation of a plan for feral pig control and management will provide the means to preserve and protect the park's significant terrain and resources in a manner which will prevent detrimental impacts to the historic battlefield condition and visitor understanding of the events the park commemorates. Any negative impacts to natural and cultural resources and habitat through inaction or piecemeal implementation of this feral pig management plan, will lead to serious and negative cumulative environmental consequences at VNMP.

The purpose of this feral pig management plan is to undertake a removal/eradication program for non-native semi-feral pigs within VNMP. By eliminating this non-native population inside the park, adverse impacts to visitors, residents, natural, cultural, and historic resources will decrease. Because of the park's urban setting, any control methods undertaken must take into consideration city and county factors, as well as the residential neighborhoods which surround the park.

OBJECTIVES

1. Protect the native species and natural processes of the park ecosystem.
2. Protect identified areas that are particularly vulnerable to grazing and rooting.
3. Protect endemic species which are presently or potentially adversely impacted by the activities of the feral pigs.
4. Ensure the opportunity for visitor experience of undisturbed cultural and natural resources and park aesthetics.
5. Protect public health.
6. Minimize adverse effects of the feral pigs on resources adjacent to the park.
7. Conserve sites threatened by accelerated erosion due to feral pig rooting.
8. Initiate conservation and restoration of soil resources damaged by the activities of feral pigs.
9. Control and reduce the spread of invasive/non-native weeds caused by the activities of the feral pigs.

ALTERNATIVES

Alternative 1 – No Action: Maintain Current Level of Management

Under this alternative, no control or removal efforts would be used on the semi-feral pig population within the boundaries of VNMP. The population numbers would continue to increase with the seasonal and long-term availability of food resources. Pigs would continue to adversely impact park vegetation and wildlife resources and increase the concern for public health and safety. If left unchecked, pig numbers can be expected to rise, with the potential to increase their range throughout the park, causing irreparable damage to cultural and natural resources. This alternative is contrary to Federal mandates to protect water, plant, animal, and cultural resources, and visitor safety.

Alternative 2 – Trapping and Removal to Approved Management Areas

Under this alternative, the semi-feral pigs would be trapped by professional trappers and transported to areas outside VNMP with the approval of the appropriate land management authority or donated to state agencies through an established agreement. This alternative would include a monitoring phase for detection of remnant feral pigs to assess the success of the removal effort.

It must be emphasized that feral pigs are susceptible to a wide range of infectious and parasitic diseases, some of which are shared with other animals, including humans, and transporting live animals could increase the

potential for transmission of these diseases in the relocation areas. State regulations in Mississippi and Louisiana prohibit the transport of live hogs and violation can incur severe penalties, therefore making implementation of this alternative undesirable.

Alternative 3 – Removal/Eradication of Feral Pigs from within VNMP (Preferred Alternative)

Under this alternative, total removal/eradication efforts would be employed to eliminate the semi-feral pig population within the boundaries of VNMP, with the goal of preventing further re-invasion of this nuisance species.

Methods to be considered for implementation to remove/eradicate the feral pig population in VNMP include:

Baiting
Baiting would take place with careful monitoring to ensure consumption by the target species. Various small bait stations would be established throughout the affected area, particularly near areas of high feral pig concentration as determined by visual observations of pigs and rooting damage. During the bait station acclimation period, field personnel would be able to estimate the population size using the bait station.

Trapping
This control/removal method would be the main focus of the VNMP management plan. The option would produce minimal damage to park resources or threats to visitor and employee safety, and achieve a satisfactory balance of environmental preservation, visitor experience, public safety, and economic impact.

Contracting with a professional trapper or agency service which would involve setting up pig traps in areas of high concentration and baiting with the above referenced bait. Through training of park staff, the traps would be monitored regularly and the professionals notified upon capture to facilitate removal of the feral pig(s) from the park. Guidelines for trapping include:

1. Trap inspection within 12 hours maximum;
2. Trap placement remote from visitors;
3. GPS marking of traps;
4. Carcass deposition away from visitor access areas;
5. Coordination of trapping efforts through Resource Management staff.

Live traps are the preferred method of capture. Initial trapping typically yields the highest ratio of animals collected over time, and this drops over time until the program is no longer cost effective.

Handling Captured Feral Pigs
The principle weapon of the feral pig is teeth. Immature pigs have sharp, needle-like deciduous teeth that inflict nasty wounds that are septic and serious. Adult swine tear flesh easily. They have extremely strong jaws capable of crushing bones. Boars also develop elongated canine teeth called tusks, which are fearsome weapons capable of disemboweling a horse and certainly a person. The sow with a litter is a formidable, menacing animal and should be approached with caution.

It is impossible to safely and humanely handle an unrestrained feral pig in a large enclosure, whether adult or immature, without a squeeze chute or chemical sedatives. The pig is moved into a small pen by driving, or enticing it into the small enclosure with feed, either individually or as a group.

Animal Control Agents
This option would be used only if the method of trapping and disposition referenced above was unsuccessful in achieving the desired objectives for feral pig removal. Implementation of this option would require the additional review and approval of the park superintendent.

Trained and certified animal control agents would collect feral pigs on the ground or from temporary tree stands, with the possible use of the technologies described below. NPS personnel would be qualified and certified for firearms use to dispatch hogs. Firearms used for this program would be restricted to NPS property.

All wildlife collection operations would be closely coordinated with Law Enforcement, Resource Management, and Maintenance personnel to ensure maximum safety to residents and visitors. Direct reduction activities would be well-organized by NPS program coordinators. NPS law enforcement personnel and others would ensure proper closure and visitor clearance from each area. Personnel safety would be of greatest concern at all times. Each team would be equipped with both a two-way radio and cellular telephones.

Capture and Disposition of Non-target Wildlife

The live capture traps proposed for use are relatively species-specific. However, non-target species may be incidentally captured, and must be handled in a manner that reduces the probability of injury or suffering. The main non-target wildlife that might become an incidental target in VNMP would be white-tailed deer, which would be released immediately upon discovery.

Final Disposition

Final disposition of live-captured feral pigs would be the prerogative of the contracted professional trapper, subject to state regulations as referenced in Alternative 2. Feral pigs dispatched through animal control would be disposed of by burying in a shallow grave or donated to a public agency. Burial would occur in a shallow grave at least 50 yards from streams, visitor access areas, trails, roads, or building, and may include a small portion of lime. Lime accelerates the rate of decomposition in the warm, moist, weather. A 300-pound carcass often completely decomposes within 10 days. These opportunities would be permitted, scheduled and controlled through the program coordinators.

CONTRACTING

Due to the immense damage already caused by feral pigs in VNMP, immediate action needs to be taken to prevent further detrimental impacts to the cultural and natural landscape. The park lacks the personnel, training, and expertise to implement an effective feral pig control program, and has initiated communication with USDA Wildlife Services to discuss cooperation between the two agencies, using USDA personnel trained in managing nuisance species on Federal lands in a safe and effective manner. USDA is willing to provide this service, including necessary tools and equipment, at a reasonable cost and due diligent manner, supplemented with direct assistance from VNMP resource management staff. Additionally, this will provide hands-on training for park personnel and develop a collaborative effort with USDA to enable continued feral pig management beyond this initial undertaking.

INFORMATION AND EDUCATION ACTIONS

Public awareness regarding the feral pig removal/eradication program would be promoted whenever possible. VNMP personnel would work with community leaders in an effort to maintain communication avenues and resolve any problems.

There is also a need to convey information regarding feral pig management to park visitors who are unaware that feral pigs occur in the park or that the pigs' activities have such a devastating impact on the ecosystems and resources of the park.

VNMP needs to continually work with owners to keep domesticated, non-native species from becoming nuisance issues on park property.

MONITORING

Park staff would continually monitor the control program as it progresses and after the management project has been completed. Prevention of, and taking immediate action to control future invasions by feral pigs, and other non-native, detrimental wildlife, would be instrumental in overall park resource management activities.

MEASUREABLE RESULTS

Significant negative impacts are already discernable in VNMP as observed by the rooting damage caused throughout the affected area, eventually leading to severe erosion issues if left unchecked, as well as the detrimental effect on the overall visitor experience because of the intrusive visual sightings of the feral pigs and their resource damage.

Implementation of the feral pig management plan as outlined above will greatly decrease and/or eliminate the adverse impacts of this non-native population on the park's unique cultural, historical, and natural resources, allowing park staff to continue to preserve and protect its landscape to provide the most enjoyable visitor experience.

RESOURCES

Congaree National Park. 2002. Implement Feral Hog Control at Congaree National Park. PMIS Project #82613.

Great Smoky Mountains National Park. 1993. Wild Hog Management Guideline. 37 pp.

Louisiana Wildlife & Fisheries. 2009-2010. Louisiana Hunting Regulations. 44 pp.

Mississippi Department of Wildlife, Fisheries & Parks. 2009-2010. Nuisance Wildlife in Mississippi: Regulations. Pamphlet.

Morrison, Scott A. 2007. Reducing Risk and Enhancing Efficiency in Non-Native Vertebrate Removal Efforts on Islands: A 25 Year Multi-Taxa Retrospective from Santa Cruz Island, California. Managing Vertebrate Invasive Species: Proceedings of an International Symposium (G. W. Witmer, W.C. Pitt, K.A. Fagerstone, Eds). USDA/APHIS/WS, National Wildlife Research Center, Fort Collins, CO. 2007.

Virgin Islands National Park. 2003. Final Environmental Assessment: Sustained Reduction Plan for non-native Wild Hogs within Virgin Islands National Park. Dept. Interior, Nat. Park Serv., Southeast Region. 94 pp.

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