



Feral Horse Management at Assateague Island National Seashore

Assateague Island National Seashore was established in 1965 as a unit of the National Park System. The mission of the National Seashore is to preserve and protect the unique coastal resources of Assateague Island and provide high quality resource-based recreational and educational opportunities. The feral horses of Assateague Island are one of the Park's most well known resources. Thousands of visitors are attracted to the Seashore each year for the opportunity to view free-roaming horses in a natural setting. Since the Park Service acquired ownership of the horses in 1968, the size of the population has grown dramatically. With this growth has come an increase in the negative effects of feral horses on other natural resources. Although the horses are an important part of the Assateague experience, there is a pressing need to manage the population in ways that will provide for the long-term health of the herd as well as minimize adverse impacts to other resources.

The NPS is faced with competing objectives and interests in managing the feral horses. The goal of this planning process is to find an appropriate and sustainable balance between:

Protecting the health and viability of the herd and providing visitors with reasonable opportunities to view free-roaming horses.



Protecting the natural barrier island ecosystem and the many rare species and sensitive plant communities that occur there.

Horse Management Goals

- ✓ Reduce the negative impacts of horses on key species, communities and natural processes to levels compatible with legal mandates and the continued evolution of Assateague Island toward a natural condition.
- ✓ Maintain a free-roaming herd of feral horses that exhibit natural characteristics and are subject to natural processes.
- ✓ Maintain a healthy population of horses capable of successful reproduction.
- ✓ Educate the general public on the Assateague horses, including their history, behavior, ecological impacts and scientifically-based management.
- ✓ Recognize and utilize the population as a valuable research resource; however, management strategies shall not be modified in the interests of research.
- ✓ Provide a reasonable opportunity for visitors to view horses safely.



History of Horses on Assateague Island

Horses were first recorded as being present on Assateague Island in the **1600s**.

Early residents used to graze livestock and it is thought they used the island to avoid taxation.

1920 - First pony-penning held by Chincoteague Volunteer Fire Department in Virginia.
The profit was used to support the Fire Department.

1961 - Private Maryland landowner purchases 9 horses from Chincoteague.

1968 - National Park Service acquired ownership of MD horses and their offspring.
The herd has grown to 28.

1982 - National Park Service published General Management Plan.
This plan designates the feral horses as a non-native species, but also directs the horses to be managed as a “desirable feral species”.

1994 - National Park Service begins immunocontraceptive program.
Immunocontraceptive program successfully lowered reproductive rates of feral horse population, but proved to be insufficient to reverse the declining ecological health of the island.

Fall 2006 - National Park Service initiates planning process to identify and assess alternatives for future management of the Assateague horses.

1943 - Chincoteague National Wildlife Refuge is established.
Horse herd ownership officially passed to Volunteer Fire Department.

1965 - Assateague Island National Seashore is established.
Fence separating MD and VA erected and all horses removed from MD except 9 private horses purchased in 1961.

1970's – 1980's - National Park Service observed increasing evidence of resource damage caused by the expanding population of feral horses.

1985 - National Park Service recognized the need for population control and initiated research to develop contraceptives.

Spring 2006 - Population and Habitat Viability Workshop conducted by Conservation Breeding Specialist Group with key stakeholders and partners.
The workshop identified an optimum population size that balances protection of horses and ecosystem.

Spring 2008 – Environmental Assessment of horse management alternatives released for public review



Environmental Effects of Feral Horses on Assateague Island

Management Goal: Reduce the negative effects of horses on key species, communities and natural processes to levels compatible with legal mandates and the continued evolution of Assateague Island toward a natural condition.

Examples of Horse Related Impacts

Reduced Diversity and Altered Community Species Composition

- Horse grazing is contributing to a reduction in plant diversity in island forest and beach communities.
- Horse grazing is causing alterations in the species composition of low salt marsh communities. The result has been an increase in the amount of area occupied by plant species that are less tolerant of prolonged periods of inundation.

Reduced Productivity and Reproductive Capacity

- Horse grazing is reducing the primary productivity as well as the number and size of flowering seed heads in island dune and low salt marsh communities.
- Horse grazing is currently a primary factor causing a reduction in the survival, productivity and reproductive success of seabeach amaranth, a plant species that is federally listed as threatened with extinction.

Priority Issues

- ✓ Impacts to salt marsh
- ✓ Impacts to dune formation / stability
- ✓ Fewer rare and threatened species
- ✓ Changes in plant composition
- ✓ Reduced biodiversity
- ✓ Loss of natural habitats
- ✓ Disruption of wildlife ecology



Horse-related impacts to island resources were first observed when the population was between 80 - 100 horses.



Inside Grazing Enclosure

Outside Grazing Enclosure

Reduced Cover and Loss of Functional Value

Horse grazing is reducing the amount of vegetation growing in island dune and low salt marsh habitats. This in turn disrupts essential island ecological functions such as dune formation or water filtration / marsh sedimentation processes.

Disrupted Succession

Horse grazing is significantly increasing the rate at which bulrushes colonize new areas. This has resulted in accelerated habitat alterations which in turn are reducing the reproductive success of piping plovers, a bird species that is currently threatened with extinction.

Reduction of Rare Species

Horse grazing is decreasing the abundance of secretive marsh birds such as Black, Virginia and Clapper rails. Black rails are considered to be in need of conservation action in Maryland.



Population Health of Feral Horses on Assateague Island

Management Goal: Maintain a free-roaming herd of feral horses that exhibit natural characteristics and are subject to natural processes.

“Free Roaming”

- Horses have the ability to travel more or less freely on the island
- Permanent barriers to horses are discouraged
- Fewer horses may reduce the need to limit horse access to sensitive areas

“Natural Characteristics”

- Access to critical biological and social resources is ensured
- Population management strategies must ensure that horse behavior remains normal

Management Goal: Maintain a healthy population of horses capable of successful reproduction.

“Healthy Population”

Behavior - Demonstrates normal social organization and behaviors of wild horses

Nutrition - Exhibits average body condition indicative of adequate nutrition

Genetic - Maintains sufficient genetic diversity to avoid inbreeding effects

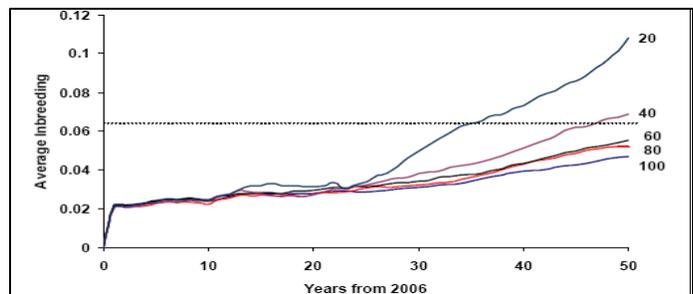
Life History - Demonstrates characteristics consistent with other healthy wild horse populations (e.g., longevity, sex ratio, age structure)

“Capable of Reproduction”

- Protect animals in peak reproductive status (e.g., 7-12 years of age)
- Maintain genetic diversity to avoid inbreeding effects
- Maintain natural age/sex distribution (predictable numbers of foals & mortality)

Genetic Status of the Assateague Horses

- Genetic samples from 176 horses analyzed in 2005
- Mitochondrial DNA used to assess maternal pedigree for every individual
- Computer modeling used to infer paternal pedigree
- Nuclear genotypes used to assess genetic diversity of herd
- Genetically-verified pedigree used to examine age and sex structure of herd



Accumulation of inbreeding over time for different target population sizes

The Results

- ✓ *Current population maintains a relatively high level of genetic diversity*
- ✓ *Original ‘founders’ of the herd continue to be well represented in the population*
- ✓ *Moderate rate of loss of genetic diversity*

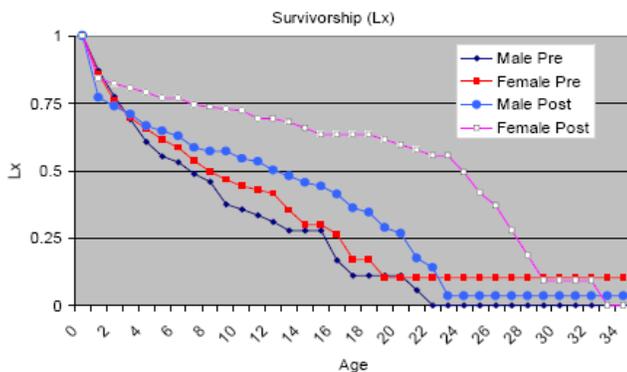


Population Management Through Immunocontraceptive

The National Park Service has been controlling horse population growth since 1994 using contraceptives. Porcine Zona Pellucida (PZP) is a non-hormonal contraceptive that works with a mare's immune system to prevent fertilization. At present, every mare begins contraceptive treatments at two years of age and is then treated for three consecutive years. At that point the mare is allowed to foal once, after which she is returned to annual contraceptive treatments for life.

PZP Contraception

- 93%-100% effective each year
- Fully reversible for up to five consecutive years of treatment
- Delivered remotely using a dart rifle with no capture or handling of horses necessary
- Safe for pregnant mares and their unborn foals
- No negative side effects on horse health
- Will not pass through the food chain
- No effects on behavior or social structure



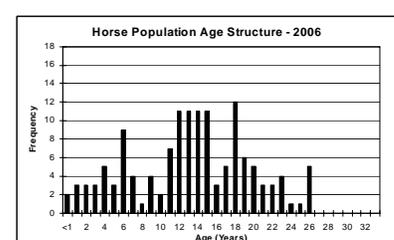
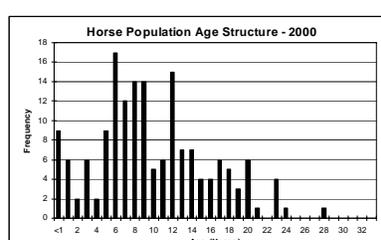
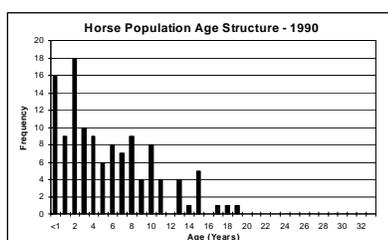
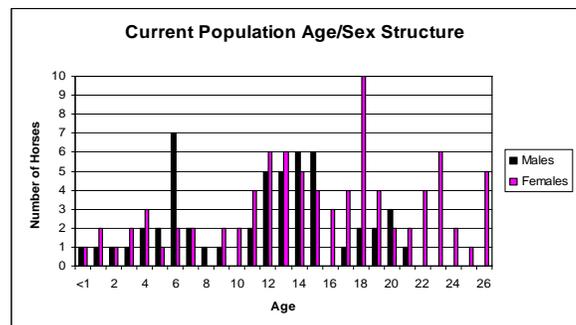
Contraception has improved the health and life expectancy of mares

- Approximately 70% of the mares are being treated annually
- Maximum age for mares to date is 32, stallions 24

March 2007 feral horse population = 137
79 females and 58 males

How has contraception changed the horse population?

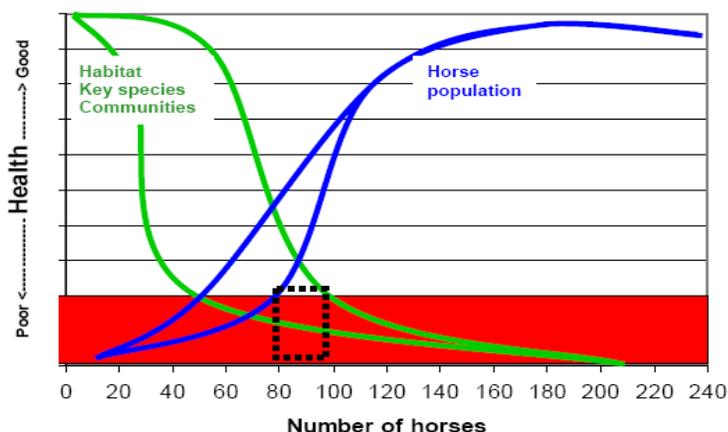
- Population size has slowly decreased.
- Age structure has changed from mostly young horses to primarily middle-aged.
- Mares are living longer, healthier lives.
- The sex ratio at birth is still 50-50, but the overall ratio is now 40-60 males to females.
- The population would benefit from having a higher proportion of younger horses





Finding an Appropriate and Sustainable Balance

To protect the natural resources of the island, how many horses are acceptable, and, to maintain a healthy herd, how many horses are necessary?

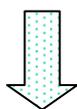


Theoretical relationship between number of horses on MD portion of Assateague Island and the relative health of the horse population (in blue) and ecosystem (in green)

In 2006, a Feral Horse Population and Habitat Viability Assessment (PHVA) was conducted to consider the issues surrounding the feral horse population on Assateague. The PHVA engaged resource experts, stakeholders, and advocacy groups in a series of workshops during which participants reviewed pertinent information, defined key issues, and identified potential management strategies. The results of the PHVA suggest that a **population range of 80-100 horses** will significantly reduce the impacts caused by horses yet protect the long-term health and viability of the herd.

Strategies to Reduce Horse Population Size

Contraception Alone

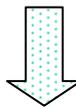


Continue existing program of intensive contraception (deaths > births) and slowly reduce the population to the target level

When target is reached, maintain population within range (births = deaths) using contraceptives

Slower (up to 8 years)

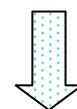
Contraception & Removals



Continue existing program of intensive contraception along with removal of select horses

When target is reached, maintain population within range (births = deaths) using contraceptives

Removals Alone



One time removal of horses to quickly reduce the population to the target level

When target is reached, maintain population within range (births = deaths) using contraceptives

Faster (as little as 2 years)



Timeline



Options for Horses Removed from the Island:

- ✓ Adoption Program
- ✓ Private Off-island Sanctuary



Alternative A: No-Action

Alternative A, the No-Action Alternative, would continue all present feral horse management activities and operations at Assateague with no major changes in the present course. The NPS would continue to operate under the *1985 Feral Pony Management Plan* (NPS 1985), and the 1995 Environmental Assessment (NPS 1995) that supplements the management plan.

- Continue using PZP contraceptive vaccine to maintain the population at or near 150 horses
- No new strategies would be implemented for reducing the size of the herd

Impacts unique to Alternative A:

- Adverse impacts to vegetation communities, dunes, and wetlands would continue at the current intensity
- Disturbance and degradation of habitat for other wildlife, including threatened and endangered species, would continue at the current intensity

Alternative B: One-time Capture and Removal

Alternative B, the One-time Capture and Removal Alternative, would reduce the feral horse population to the desired range of 80-100 within two years, using the strategy of a one-time removal of up to 30 horses. After the removal, contraception would be used to maintain the population within the desired range.

- Biological and social criteria would be considered in selecting horses for removal
- Horses would be placed either through an adoption program or in a sanctuary
- Horses would remain the property of the NPS and be monitored for life to ensure their health and well-being

Impacts unique to Alternative B:

- Meets population goal faster, so recovery of degraded habitat begins sooner
- Break in contraception can begin sooner, enhancing long-term health of herd
- The expense of removals and subsequent lifetime monitoring of removed horses could exceed existing budget allocations



Alternative C: Intensive Contraception

Alternative C, the Intensive Contraception Alternative, would reduce the feral horse population to the desired range of 80-100 within 5-8 years through the continued intensive use of PZP immunocontraception. There would be no capture and removal of horses.

- Reproduction would be limited to the maximum extent possible
- Population size reduction would be achieved through natural mortality
- When desired range is reached, less intensive contraception would be used to maintain population size

Impacts unique to Alternative C:

- Takes longer to reach population goal, thereby delaying recovery of degraded habitats
- Demographics of feral horse population would continue to be altered by intensive contraception
- Contraception program costs represent a relatively small proportion of the Park's overall budget and operation

Alternative D: Intensive Contraception with Periodic Removals/Additions

Alternative D is essentially the same as Alternative C, except that it would also include the option to periodically capture and remove select individuals from the herd and replace them with horses from off-island sources.

- Removals under Alternative D would be strictly to manage the genetic and demographic health of the population, and not a means of population reduction
- Removals/additions would typically involve small numbers of horses at a time (2-5)
- Selection, placement and monitoring of removed horses would be as described in Alternative B
- Additions would ideally be from other east coast barrier island populations which have similar ancestry and adaptation to coastal habitat conditions

Impacts unique to Alternative D:

- Allows a means for improving the genetic and demographic health of the population
- Additional population management expense incurred by the periodic removals/additions



Environmental Consequences

Intensity of consequences

Intensity of consequences are generally categorized as being negligible, minor, moderate, or major, with negligible being the least severe and major being the most severe. Because level of intensity varies by impact topic, they are defined separately for each impact topic in Chapter 4 of the Environmental Assessment.

Duration of consequences

The duration of the consequences were determined for both the short-term (ST) and long-term (LT). For the purpose of this EA, short-term refers to the period from 1 – 5 years after implementation of the selected alternative and long-term refers to the period beyond 5 years.

The impacts of each alternative were considered for the following impact topic/issue:

- Soils, Topography, and Geology
- Vegetation
- Wetlands
- Feral Horses
 - Demographics
 - Genetics
 - Behavior, Health and Social Organization
- Other Wildlife and Wildlife Habitat
- Threatened and Endangered Species
- Park Operations and Administration
- Visitor Use and Experience

Type of consequences

Beneficial: A positive change in the condition, appearance, and/or functionality of the resource, or a change that moves the resource toward the desired condition.

Adverse: A change that moves the resource away from a desired condition, or detracts from its appearance, condition, and/or functionality.

The following table is a summary of the predicted environmental consequences of the Alternatives (A, B, C, D) on each impact topic. Please refer to Chapter 4 of the Environmental Assessment for a detailed analysis of the consequences of each alternative.

Impact Topic	Alternative A: No-Action	Alternative B: One-time Capture and Removal	Alternative C: Intensive Contraception	Alternative D: Intensive Contraception with Periodic Removals/Additions
Soils, Topography, Geology	ST moderate adverse impact LT moderate adverse impact	ST moderate beneficial impact LT moderate beneficial impact	ST negligible beneficial impact LT moderate beneficial impact	ST negligible beneficial impact LT moderate beneficial impact



Environmental Consequences

Impact Topic	Alternative A: No-Action	Alternative B: One-time Capture and Removal	Alternative C: Intensive Contraception	Alternative D: Intensive Contraception with Periodic
Vegetation	ST moderate adverse impact LT moderate adverse impact	ST moderate beneficial impact LT moderate beneficial impact	ST negligible beneficial impact LT moderate beneficial impact	ST negligible beneficial LT moderate beneficial impact
Wetlands	ST moderate adverse impact LT moderate adverse impact	ST moderate beneficial impact LT moderate beneficial impact	ST negligible beneficial impact LT moderate beneficial impact	ST negligible beneficial LT moderate beneficial
Feral Horses	<u>Demographics:</u> ST negligible adverse; LT moderate adverse <u>Genetics:</u> ST negligible beneficial; LT minor adverse <u>Behavior, health, social organization:</u> ST negligible beneficial; LT negligible beneficial	<u>Demographics:</u> ST moderate beneficial; LT moderate adverse <u>Genetics:</u> ST moderate beneficial; LT minor adverse <u>Behavior, health, social organization:</u> ST moderate adverse; LT minor beneficial	<u>Demographics:</u> ST minor adverse; LT moderate adverse <u>Genetics:</u> ST negligible adverse; LT minor adverse <u>Behavior, health, social organization:</u> ST negligible beneficial; LT negligible beneficial	<u>Demographics:</u> ST minor adverse; LT minor beneficial <u>Genetics:</u> ST minor adverse; LT moderate beneficial <u>Behavior, health, social organization:</u> ST negligible beneficial; LT negligible adverse.
Other Wildlife and Wildlife Habitat	ST moderate adverse impact LT moderate adverse impact	ST minor beneficial impact LT moderate beneficial impact	ST negligible beneficial impact LT moderate beneficial impact	ST negligible beneficial impact LT moderate beneficial impact
Threatened and Endangered Species	ST moderate adverse impact LT minor to moderate adverse impact	ST moderate beneficial impact LT minor to moderate beneficial impact	ST minor adverse impact LT minor to moderate beneficial impact	ST minor adverse impact LT minor to moderate beneficial impact
Park Operations and Administration	ST negligible beneficial impact LT negligible beneficial impact	ST moderate adverse impact LT minor beneficial impact	ST negligible adverse impact LT minor beneficial impact	ST negligible adverse impact LT negligible beneficial impact
Visitor Use and Experience (including health and safety)	ST negligible beneficial impact LT negligible beneficial impact	ST minor adverse/beneficial impact LT negligible/ minor beneficial impact	ST negligible/minor beneficial impact LT negligible/minor beneficial impact	ST negligible/minor beneficial impact LT negligible/minor beneficial impact



Horse Management Planning

Steps in the Planning Process

- Step 1. Define purpose and need for action
- Step 2. Conduct scoping and define alternatives
- Step 3. Identify environmental impacts and select preferred alternative
- Step 4. Prepare Environmental Assessment - assessment of effect
- Step 5. Public review of Environmental Assessment**
- Step 6. Analysis of public & agency comments
- Step 7. Prepare decision document
- Step 8. Release decision document to the public

We are here

This is your time to provide comments on the Environmental Assessment.

The official public review process ends on July 11th, 2008.

Please send your written comments to:



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Questions? Contact: Carl Zimmerman



By telephone: (410) 641-1443, x 213
Or email: carl_zimmerman@nps.gov

You can also provide us with comments by logging on to the National Park Service's
Planning, Environment and Public Comment website at

<http://parkplanning.nps.gov/>

Thank you for your Participation!