Horse (*Equus caballus*)

**Background**

Evidence suggests that domestic horses (*Equus caballus*) were on Assateague as early as 1669 when settlers put their livestock, including horses, on the island. Descendants of these animals have been living in the wild on Assateague for well over 300 years.

**Monitoring Trends**

When Assateague Island became a national seashore in 1965, there were 21 horses on the Maryland portion of the island. However, it was not until 1975 that scientists began to survey the island’s horse population. Surveys continue today over a 35 km (21 mile) area between the Ocean City Inlet and the Virginia state line where the horses roam freely. During the surveys, which are completed six times a year by vehicle and foot, each horse in the population is accounted for.

A sighting record is completed as each horse is identified by a combination of features including color, sex, markings, scars or conformational differences. This information is then added to a database where scientists and seashore managers track biological data such as age structure and maternal ancestry of the herd, the ratio of male to female horses, mortality and frequency of foaling.

Early surveys revealed that the original population of 21 horses present when the seashore was established was increasing at a rate of 10 to 15% annually. With a ballooning population, important concerns surfaced for managers: how to protect the long-term health and viability of the horses while at the same time minimizing their impact on the environment.

Subsequently, a series of studies were launched to determine the impact of the horses on island vegetation. The studies focused on the species of vegetation that the horses prefer– saltmarsh cordgrass (*Spartina alterniflora*), American beachgrass (*Ammophila breviligulata*), and three-square sedge (*Scirpus americanus*)—and revealed that these species were being over grazed. Additionally, scientists determined that the island could only support a limited number of horses if impacts to island vegetation were to be minimized. Later ecological studies revealed that heavy grazing contributed to a reduction in the abundance, density, size and diversity of plants in both wetland and dune habitats. Scientists also noted that fauna found within those habitats were impacted negatively by the reduction of habitat quality.

![Population Growth & Foal Production](image)

*Figure 1: Horse Population Growth and Foal Production on Assateague Island National Seashore, 1965-2012 (Blue line - horse population, Red line - foal births, Blank space - unavailable data)*

With ecological studies and horse population surveys in hand, seashore managers decided it was necessary to set a horse population management goal. In the early 1980s, after carefully examining grazing and behavioral studies, managers decided on an initial population goal of 150 animals.

Scientists and seashore managers then explored a variety of methods to reduce and stabilize the population, knowing that removing or selling animals for population control was not acceptable. Based on
on results of limited field trials with a wild mustang population in the west, managers agreed to allow scientists to test the feasibility of controlling the horse population with some type of contraception.

In 1986, the initial fertility control studies on Assateague focused on using steroids to inhibit sperm production in stallions and ovulation in mares. This approach proved ineffective with the Assateague horse population. Researchers then focused their efforts on the promising field of immunocontraception. Ideally, the contraceptive would be effective, reversible and safe. It would not affect social behavior and would be remotely deliverable so that no animal would have to be captured.

In 1988, scientists began field trials that focused on administering the contraceptive Porcine Zona Pellucida (PZP) to 26 mares. Six untreated mares were added to the trial for comparison. That fall, pregnancy tests revealed that no treated mares were pregnant. However, three untreated mares were.

Management

PZP is an immunocontraceptive vaccine that works with a mare’s immune system. One cc of the vaccine is loaded into a dart that is fired from a gun at a range of 25 to 50 meters from the receiving mare. The dart’s impact with the mare’s hip sets off a cap charge which injects the vaccine, and then the dart drops off the animal.

A mare is taken off contraception at age four and remains off until she delivers a live foal. She is then put back on the contraceptive for the rest of her reproductive years. An unexpected, but not surprising benefit of contraception is that mares are living longer and healthier lives. Prior to the initiation of the contraception program, few mares lived beyond their late teens. Now it is not uncommon for them to live into their late twenties or early thirties.

Adaptive management of the seashore’s horses is an evolving process. In 2006, based on current genetic and ecological studies, managers revised the initial population goal down to 80 to 100 animals. A population of this size will remain genetically viable and still have minimal impacts on island vegetation and habitat. As managers continue to monitor the horse population, they will be proactively engaged in protecting the island and its resources for future generations.

References
