Wild Horse Management Agreement

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Wild Horse Management Plan

Participating Agencies

Corolla Wild Horse Fund

Currituck County

US Fish & Wildlife

NC National Estuarine Research Reserve, NC Division of Coastal Management, & NC Department of Environment and Natural Resources

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Introduction

The wild horses are an integral part of the history and tradition of the Currituck Outer Banks and are culturally and economically significant to the County of Currituck.

This Management Plan is necessary to establish a common vision and goals that guide the Wild Horse Advisory Board in managing the wild horse population. The plan includes policies that address the horses themselves, the surrounding habitats, partnerships, and education. The plan also includes sections describing the organization of the board and the goals and actions. This plan was developed through a collaborative process involving all stakeholders.

Vision

The Wild Horse Advisory Board is committed to managing the wild horse population in a manner that establishes a sustainable equilibrium between the wild horse population, development, wildlife, and the environment. The Board will strive to maintain this delicate balance through:

- Working to protect the habitat, long term health, and genetic stability of the herd;
- Supporting land use actions and regulatory actions that are consistent with the plan;
- Protecting and maintaining a thriving ecological balance;
- Preserving the free-roaming nature and habits of the horses;
- Sustaining partnerships with all stakeholders;
- Supporting and offering educational opportunities; and
- Acknowledging the cultural and economic significance of the wild horses.

The Board recognizes that in order to fully realize this vision, it is imperative to work together, focusing on common goals.

Board Organization

Section 1 Advisory Board Established

There is hereby established The Currituck County Wild Horse Advisory Board.

Section 2 Duties of the Advisory Board

The Currituck County Wild Horse Advisory Board is charged with the duty of providing guidelines and general managing objectives for the Currituck Banks wild horses as adopted in this Management Plan.

Section 3 Members Composition, Appointment and Terms of Office

The Currituck County Wild Horse Advisory Board shall be composed of six voting members

a) One member from the Corolla Wild Horse Fund
b) One member from the North Carolina National Estuarine Research Reserve
c) Two at large members who reside on the Currituck Outer Banks appointed by the Currituck County Board of Commissioners
d) The Currituck County Manager or designee
e) USFWS Refuge Manager or designee

The two at large members shall be appointed for a three-year term and shall hold office until their successors are appointed. No at large member shall be allowed to serve for more than two consecutive terms unless extended by the Currituck County Board of Commissioners due to extenuating circumstances.

The Currituck County Board of Commissioners shall have the right to remove members they appoint at will and appoint a replacement member(s).

Section 4 Officers and Meetings

The Currituck County Wild Horse Advisory Board shall select, from its membership, officers every two years at the first meeting of the calendar year. The officers shall include a Chairman and Vice Chairman. The Chairman and Vice Chairman shall conduct the orderly business of the Advisory Board. The County will provide staff to serve in the position of Secretary who shall take minutes and cause the minutes to be printed and made available to the Currituck County Board of Commissioners. The Currituck County Wild Horse Advisory Board shall hold quarterly meetings unless the Chairman declares the meeting canceled for the lack of business. Special meetings may be held on call of the Chairman upon twenty-four hours notice to the members of the Advisory Board. All meetings or other business of the Advisory Board shall be conducted in accordance with the Open Meetings Law. A majority quorum will be necessary to conduct official business.

Management Goals & Actions

These goals and actions shall not be interpreted to prevent public agencies and lands from implementing their mission statement. Short term goals are defined as 1-3 years, long term goals are defined as 3-5 years, and are continually necessary to manage the herd.

Goal 1. Protect the habitat, long term health, and genetic stability of the horses.			
	Responsible Stakeholder	**Time Frame**	**Funding**
Action 1A. Research, determine, and provide a summary of next steps and data needed to undertake a comprehensive study (Population Habitat Viability Assessment).	ALL	Short	Staff time
Action 1B. Conduct a study (Population Habitat Viability Assessment) to determine the carrying capacity of land for food sources that accounts for horses and other wildlife utilizing a science based approach.	ALL	Long	As grants become available funding will be applied to components.
Action 1C. Develop a protocol and conduct an annual aerial census. (CWHF funds survey)	CWHF	Ongoing	Min $2,500-$5,000/yr.
Action 1D. Provide quarterly report to the advisory board outlining the current population and health of the wild horses, including those awaiting adoption.	CWHF	Ongoing	Staff time
Action 1E. Develop a protocol for monitoring of genetics and conduct monitoring.	CWHF	Ongoing	Staff time
Action 1F. Establish lineage for herd.	CWHF	Ongoing	Staff time
Action 1G. Provide an annual report of lineage and genetics to the advisory board.	CWHF	Ongoing	Staff time

CWHF = Corolla Wild Horse Fund, County= Currituck County, USFWS=US Fish & Wildlife Refuge, NCNERR = NC National Estuarine Research Reserve

Action 1H. Provide daily management and advocacy for the wild horse population including but not limited to veterinary care, gentling/training, transportation, adoption, removals, emergency response, boarding of sick horses, humane euthanasia, necropsy, contraception, breed conservation, and any cost associated with day to day management.	CWHF	Ongoing	Staff time
Action 1I. Develop protocol for introduction of Shackleford Banks horses.	CWHF	Short	Staff time
Action 1J. Introduce Shackleford Banks Horses into the Currituck Outer Banks as defined by protocol.	CWHF	Ongoing	$1,600/horse
Action 1K. Maintain and implement a viable population control plan that includes but is not limited to: adoptions, contraception methods, documentation, removal and replacement of horses.	CWHF	Ongoing	$50, 150
Action 1L. Provide annual report for the population control plan at the fall meeting. Also provide goals for the upcoming year for contraception, adoptions, and removal/replacement of horses.	CWHF	Yearly	$1,000 + Staff time
Action 1M. Develop protocol for the transport of horses and management of escaped horses. (Reference Actions 5 C & 5 D)	CWHF	Short	Staff time

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Goal 2. Support land use decisions and county ordinances that are consistent with the management plan.			
	Responsible Stakeholder	**Time Frame**	**Funding**
Action 2A. Recommend updates to the Unified Development Ordinance, County Code of Ordinances, and adopted plans to reflect policies and actions included in the management plan.	All	Ongoing	Staff time
Action 2B. Continue to assist Currituck County personnel in enforcing the provisions of the County Code of Ordinances through their respective capabilities.	USFWS/NCNERR	Ongoing	Staff time
Action 2C. Currituck County personnel will continue to enforce the provisions of the County Code of Ordinances.	County	Ongoing	Staff time

Goal 3. Protect and maintain a thriving ecological balance.			
	Responsible Stakeholder	**Time Frame**	**Funding**
Action 3A. Conduct an assessment of horse induced effects on state, federal and private lands and report findings to the advisory board as information is available.	USFWS/ NCNERR/ County	Ongoing	Staff time
Action 3B. Continue the monitoring of long term exclosures to determine the impact of horses on habitats.	USFWS	Ongoing	Staff time
Action 3C. Seek additional funding/staff to monitor and mitigate impacts.	All	Ongoing	Staff time
Action 3D. Conduct an ecosystem based approach for entire off road area to assess the ecological balance.	County	Long	Approximately $1 million/component

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Goal 4. Preserve the free-roaming nature and habits/behaviors of the horse population to the extent possible within the boundaries defined in the management plan (north & south fences).			
	Responsible Stakeholder	**Time Frame**	**Funding**
Action 4A. Determine and define the need for designated pasture areas in the off-road area.	CWHF	Ongoing	Staff time
Action 4B. Establish and maintain designated pasture areas.	CWHF/County	Ongoing	Approximately $53,000 (attorney fees) Variable dependent on # of easements $3,000 maintenance
Action 4C. Develop standards for acquisition, lease or easement of designated pasture areas and/or open space in the off-road area.	CWHF/County	Short	Staff time
Action 4D. Evaluate barrier options with each 5-year update of the management plan (See Appendix F)	ALL	Ongoing	Staff time
Action 4E. Continue to maintain and repair the barrier fences at the northern and southern boundaries of the off-road area as well as the cattle guard (with the exception of fence owned by False Cape State Park unless the Park is a partner in the repair).	CWHF	Ongoing	Staff time $5,150
Action 4F. Provide Impacts report to DCM and CRC with each 5 year update to satisfy the fence CAMA permit condition # 1.	County	Yearly	Staff time

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Goal 5. Sustain partnerships with all stakeholders including the NC National Estuarine Research Reserve, Currituck National Wildlife Refuge, Currituck County, and the Corolla Wild Horse Fund necessary to efficiently manage the wild horse population.			
	Responsible Stakeholder	**Time Frame**	**Funding**
Action 5A. Update the management plan, at a minimum, every five years involving all stakeholders.	ALL	Ongoing	Staff time
Action 5B. Conduct quarterly meetings of the advisory board to review current and planned management activities and provide updates on stakeholder actions.	ALL	Ongoing	Staff time
Action 5C. Continue to coordinate with the City of Virginia Beach on wild horse management planning.	CWHF/County	Ongoing	Staff time
Action 5D. Foster a relationship and engage False Cape State Park and Back Bay Wildlife Refuge.	ALL	Ongoing	Staff time
Action 5E. Conduct an annual review of the management plan at the fall quarterly meeting and provide a written report documenting the plan status.	ALL	Yearly	Staff time

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Goal 6. Support and offer opportunities to educate the public about the wild horses.			
	Responsible Stakeholder	**Time Frame**	**Funding**
Action 6A. Develop educational programs and materials that will foster public and commercial tour operators understanding of the wild horses. These include but are not limited to: • Rules & regulations • Safety • Balance habitat & horses • Transfer of property for pasture land	CWHF/County	Ongoing	$14,250
Action 6B. Continue to educate the public and commercial tour operators on the wild horses, rules & regulations, and habitat.	ALL	Ongoing	Staff time CWHF budget $35,000
Action 6C. Continue to partner and offer training opportunities for tour companies on the wild horses	CWHF/County	Ongoing	Staff time & $120 materials
Action 6D. Continue to partner with Currituck County Tourism to educate the visitors on the wild horses and related issues through website, social media, and brochures.	CWHF	Ongoing	Staff time
Action 6E. Establish partnerships with realty companies/rental home owners to develop and deliver educational media about the wild horses.	CWHF/County	Ongoing	Staff time & $300 Printing

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Plan Implementation

At the fall quarterly meeting of each year, the Board will assess the progress of actions and the need for re-examination of goals and actions for future implementation. Following the assessment, the Board should provide a written report documenting the plan status. Additionally, the plan shall be fully updated every five years, at minimum, or as needed. All signatories and board members of the plan should be notified in writing of the plan update and invited to participate in the update process.

The Chairman of the Board will be responsible for reconvening the Board and conducting the annual plan review. Criteria to be considered at the time the plan is reviewed will include the following:

- Do the goals and actions address current and expected needs?
- Are the current resources appropriate for implementing the plan?
- Are there implementation problems, such as technical, political, legal, or coordination issues with stakeholders?
- Are the goals of the Wild Horse Advisory Board being accomplished?
- Are the stakeholders providing the level of cooperation expected?

The success of this plan largely depends on the continued cooperation and coordination between the signatories of the plan. A united partnership will result in the realization of the vision of this plan.

Herd Size Statements

The Wild Horse Advisory Board recognizes that there are differing opinions of the signatories of this plan concerning the appropriate number for the overall herd size cap. At the time of this plan update, the board is operating under an adopted plan with a herd size of 60. However, as of the most recent census on September 30, 2014, the estimated herd size is 83. Since the most recent census data was prepared during the final phases of plan update, not all signatories have referenced the most recent September 30, 2014 herd size number in their statements.

The Corolla Wild Horse Fund, US Fish and Wildlife, and NCNERR each have adopted plans, policies, or missions that each approach the management of their lands, horses, or impacts by horses differently.

Each signatory has prepared a statement that explains their organization's position. While each signatory has their own position regarding herd cap size, within the next five years, the Board agrees to work cooperatively through the vision, goals, and actions of this plan to determine a new herd cap size.

North Carolina National Estuarine Research Reserve

The N.C. National Estuarine Research Reserve (NCNERR) recommends that the best available science on habitat sustainability; horse health, welfare, and genetics; and social values associated with the horses be used to determine the size of the herd. This multiphase approach is needed to meet the complex interests of those involved in management of the herd, property owners within the Wild Horse Sanctuary, and the public. The best available science that evaluates some of these factors from a similar barrier island environment is "Horses of Assateague Island Population and Habitat Viability Assessment: Final Report" (Zimmerman et al. 2006). Using a collaborative process, a series of objectives was evaluated and a range of 80-100 horses was recommended for Assateague Island, providing managers with the ability to adaptively manage the herd size as conditions change over time.

This desired science is not currently available at the level needed for the Currituck herd and the Currituck Outer Banks where the horses roam. The horse management plan update addresses this gap by committing to the following: Goal 1, Actions 1A-B articulate the need for a population viability study similar to that described above to inform the size of the herd to meet both habitat and horse sustainability and Goal 3 addresses the need to conduct and continue work to assess horse impacts on habitats. This work will allow the Advisory Board to make a more informed recommendation regarding the herd size in the next update of the management plan that balances the complex and competing interests of the parties involved in the overall management of the Currituck Outer Banks ecosystem. NCNERR recommends the herd size be based on the results of this population study.

Until the information from the population study is available, the NCNERR recommends using the existing management herd size target of 60. This recommendation is based on the following reasons: 1) No other number has been agreed upon in an official capacity since the signing of the 2007 Currituck Outer Banks Wild Horse Management Plan; 2) The presence of the horses is a management conflict with the purposes of the Reserve program; 3) There are

documented habitat impacts from the horses both at the current population level and at reduced levels as well as changes in habitat availability due to increased development; and 4) There is a need for additional study to address the complex interests associated with the presence of the horses on the Currituck Outer Banks.

Rheinhardt and Rheinhardt (2004) concluded that grazing by horses impacted vegetation on the Currituck Outer Banks in 1997 when the horse herd was estimated at 43. They speculated that trampling may have a greater impact than grazing. Feral hog activity was also acknowledged as potentially contributing to habitat impacts. The authors concluded that an increase in horse density or a decrease in carrying capacity of the habitat could result in further habitat degradation and recommended additional study to ensure effective management of the horse herd and the Currituck Outer Banks habitats.

Taggart (2008) reviewed literature on horse impacts at publicly owned and managed properties in the United States, focusing on the Currituck Banks and Rachel Carson components of the Reserve. He also outlined the management conflict that results from the presence of horses on these Reserve components in light of state and federal purposes for the Reserve. As a result, Taggart recommended protecting the Currituck horses through fenced pasture areas located outside of the Currituck Banks Reserve to remove habitat impacts and management conflicts at the site (2008).

The Reserve's 2009-2014 management plan recognizes the horses as a management conflict because of the impacts the horses cause to the ecological systems the Currituck Banks Reserve was designated to protect. The plan states that the horses are allowed to roam on the component provided they do not significantly impact Reserve habitats or impede implementation of the Reserve's research and education mission. The program will manage the Currituck Banks Reserve to prevent significant impact from the horses (NCNERR 2009).

Porter (2013) recently completed a study in the Currituck National Wildlife Refuge examining the impacts of horses, deer, and feral hogs on different habitat types in fenced and unfenced areas of the Refuge. She concluded that horses negatively impacted vegetation in the unfenced study areas where horses were allowed, detecting few disturbances from deer and feral hogs. Study areas included habitat types that are representative of those found in the Reserve; the results of the Porter study can therefore be extrapolated to the Reserve although there may be differences in impact intensity as a result of the number of horses present in the respective areas. Porter further recommended additional study to provide a more complete assessment of horse impacts and to address other questions raised by the study.

The horse herd is currently estimated at 121 horses as of the 2012 census with 28 horses documented in Wild Horse Zone 1, which includes the Currituck Banks Reserve (Corolla Wild Horse Fund, 2010-2012). This is consistent with census data collected from 2010 and 2011 when 32 of the 115 horses and 33 of the 144 horses were found in Zone 1, respectively (Corolla Wild Horse Fund, 2010-2012). Additionally, habitat availability has changed as private development on the Currituck Outer Banks has increased over time (Currituck County, 2013; See Appendix C) and the concomitant decline in the availability of natural food sources.

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US Fish and Wildlife

Habitat impacts from grazing feral horses have been well documented along the Atlantic coast and across the nation. Atlantic coast impacts have been published from herds residing in Nova Scotia (Freedman et. al. 2011), Currituck National Wildlife Refuge, NC (Porter and DePerno 2012), Northern Outerbanks, NC (Rheinhardt and Rheinhardt 2004), Assateague Island National Seashore, MD and VA (Seliskar 2003), Shackleford Banks, NC (Levin et. al. 2002), and Cumberland Island, GA (Turner 1987).

Publications show that many aspects of the ecosystem are negatively impacted by grazing and/or trampling (Levin et. al. 2002.; Turner 1987) and may ultimately result in changes to plant communities (De Stoppelaire 2001; Furbish 1994). Horse grazing has been linked to decreases in plant structure, abundance, and/or vigor (Beever et. al 2000; Porter and Deperno 2012), reduction of seed production (Seliskar 2003; Levin et. al. 2002), of which, marsh plant species are particularly vulnerable (Levin et. al. 2002; Rheinhardt and Rheinhardt 2004). Additionally, as a result of excessive herbivory, reductions in above and below ground biomass (Furbish et. al. 1994; Levin et. al. 2002) declines in species richness including many birds, mammals, and/or fish (Beever et. al 2000; Levin et. al. 2002) have been documented as well as increased erosion (Seliskar 2003: De Stoppelaire 2001) and reduced dune development (De Stoppelaire 2001; De Stoppelaire 2004).

The most comprehensive science regarding population management of horses on the Atlantic coast is the Horses of Assateague Island Population and Habitat Viability Assessment (PHVA) (Zimmerman et. al. 2006). In this assessment the same issues needed to manage the Corolla horses were reviewed and a population size of 80 to 100 horses roaming on a 37-mile barrier (Ave. 2.4 horses per mile) island was deemed acceptable. Recent population estimates for the Corolla horses which roam only an 11-mile area range from 121-144 (Ave. 12.1 horses per mile). Even at a stocking rate of 60 for the Corolla herd the number of horses (Ave. 5.5 horses per mile) would be over double the recommended rate established in the 2006 PHVA.

Recent monitoring by Service biologists at Currituck NWR have identified major habitat impacts and have identified the potential conversion of habitat types similar to those identified by De Stoppelaire 2001. These conversions seem to be pushing the natural ecosystem toward one dominated by exotic and/or non-desirable vegetation. Native vegetation that can produce a root mat capable of withstanding the effects of erosion is transitioning to vegetation with a root mat that is less robust.

Implementation strategy 2 of the 2007 Currituck Banks Wild Horse Manage Plan (Plan) was: "Control the horse population for the protection of the fragile ecosystems on the public and private lands." The strategy stated: "In this regard, a maximum of 60 horses will be permitted with population controlled through adoption, relocation, auction or contraceptive fertility methods." The Plan also called for the establishment of monitoring exclosures to monitor impacts of horses on habitat. Sixty is believed to represent the herd population at the time the original Plan was written. In 2002, the last time the herd was as low as 60, some negative habitat impacts were noted in the areas where horses had access compared to the exclosures where horses did not have access. In 2007, when the herd was roughly 90, photo documentation shows significant negative habitat impacts to the areas where horses had access compared to the exclosures. In 2011 and 2012, with a herd size of approximately 119 and 144, respectively, photo documentation shows virtually no remaining grazing habitat in the horse-accessible area near the exclosure fences.

The Service has a policy (Chapter 7, Refuge Manual, Section 6, (7RM6)) that horses should not be on National Wildlife Refuges because they compromise the ability to meet its conservation mission. However, the Service signed previous Plans to be a good neighbor, and to deal with the situation in a practical manner by seeking to build a partnership with the local community to cooperatively control the numbers of the herd. The Service will address these animals as feral and manage the refuge in that context. Since these are non-native animals (as defined in 50CFR30.11), as time and money are available, and monitoring shows negative impacts, they will be fenced out of negatively impacted habitats and off the refuge as is practical.

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Corolla Wild Horse Fund

On May 5, 1935, the Raleigh News and Observer reported that the Banker ponies had to make way for "the path of progress expected to take the form of a national park that would extend 100 miles along the coast and include the 'banks' where they now roam." By 1937 Cape Hatteras National Seashore was established, and the path of progress became NC 12. On June 14, 1938, the Raleigh News and Observer announced that "the final extinction of the Banker pony, wild horses that have roamed the Outer Banks for centuries, was begun this morning." Armed with high powered rifles, two hunters continued the work of removal that had begun several years earlier as a result of massive Depression-era round ups and shootings. The eradication was supported by the US Forest Service and the Federal Bureau of Fisheries (now US Fish & Wildlife Service). (C. Prioloi, (2007)*The Wild Horses of Shackleford Banks*)

The Corolla Wild Horse Fund hired its first fulltime professional staff in mid and late 2006. The original wild horse management plan was due to be reviewed and signed in October of 2006. Although the CWHF was not in agreement with the herd size of 60 in the plan because it was not based on published or peer-reviewed science, the staff had only been in their positions three months and one month respectively. The Plan was signed in 2007 with the understanding that it was a living document that could be amended as needed.

Many researchers have demonstrated the beneficial or potentially beneficial effects of the grazing of large herbivores on ecosystems, especially wetlands and grasslands. Documented beneficial environmental effects of wild horses include:

Breaking up homogeneous grass stands, producing a patchy, open cover with a diversity of forbs. (USFWS, 1999)

Dispersing seeds of desirable native plants. (Hobbs,1996; Severson & Urness, 1994; Stroh, Mountford & Owen, 2012)

Promoting biological diversity, accelerating succession, and encouraging a diverse mosaic of desirable plants. (Bakker, 1985; Bazely & Jeffries, 1986; Hobbs, 1996; Jensen, 1985; Menard et al., 2002; Severson & Urness, 1994; Vavra, 2005)

Increasing the nutritional value of forage. (Hobbs, 1996; Severson & Urness, 1994)

Enhancing regrowth of forbs beneficial to waterfowl. (Evans 1986)

Greatly enhancing the diversity of bird species. (Levin et al,. 2002)

Altering community composition of birds, increasing foraging habitat for willets, least sandpipers and other birds that prey on small invertebrates. (Levin et al., 2002)

Greatly reducing height and density of invasive Phragmites, (Duncan & D'Herbes, 1982)

On Shackleford Banks, horse grazing in marshes provides a bountiful feeding ground used by a diverse community of foraging shorebirds. (Levin et al., 2002) Disturbance by large herbivores increases the diversity and quality of wildlife habitat, creating a patchwork of diverse food resources (Lamoot, 2004; Vavra 2005)

Rheinhardt and Rheinhardt (2004) found that horses on the Currituck Outer Banks "consume few forbs (herbaceous plants) species and graminoid (grass) species seem to recover by early summer when primary production is highest."

A four year University of Notre Dame study (Wood, 1987) found that the Shackleford horses' diet had no statistically significant impact on salt marsh plants in three out of four years, no statistically significant impact on long leaf pennywort all four years, no statistically significant impact on sea oats all four years, and no statistically significant difference in bluestem grass.

While today USFWS considers wild horses "exotic and potentially damaging to vegetation under active management" (USFWS 2008, p.194), in the 1940's the agency thought otherwise. Rachel Carson, a world renowned marine biologist, environmentalist, and editor-in-chief for US Fish and Wildlife Service wrote that when the Chincoteague refuge was created, the refuge allowed residents of Chincoteague to graze 300 head of cattle and horses on the refuge, and noted no adverse effects on waterfowl (twice as many head as permitted today). "The

presence of these grazing animals is not detrimental to the wildlife for which the waterfowl for which the refuge was established," she said (Carson, R. 1947, pg. 17).

Baker and Valentine (2006) found that any decline in waterfowl populations in and around the refuge was due to turbidity in the sound from recreational boating, agricultural runoff, and development. There was no mention of wild horses in relation to the decline. In addition, by the middle of the 20th century, three thousand tons of expended lead shot was accumulating in the marshes every year and being ingested by waterfowl. Roughly two million ducks succumbed to lead poisoning and more become chronically ill and slowly wasted away (Bolen, 2000). Today, waterfowl are challenged by environmental contaminants, invasive plants, and continued development (Pease, Rose, & Butler, 2005).

Wild horses have also been blamed for negatively impacting the endangered piping plover. However, published data indicates that the presence of Island horses has little effect on the Piping Plover population. Breeding pairs on the Maryland portion of Assateague have increased from 14 in 1990 (horse census about 130) to 66 in 2006 (horse census greater than 140) (Hayward, 2007).

In relation to the current defined herd size of 60, there are numerous scientific studies that support this is not a viable number for a wild herd, especially one that peer-reviewed science has already shown is now descended from only one maternal line. (Cothran, 2011)

In 2007, the Corolla Wild Horse Fund pulled DNA samples via mane/tail hair and remotely delivered dart. The goal was to gather information for a baseline study of the overall genetic health of the herd. The samples were analyzed by Dr. E. Gus Cothran of Texas A&M University, one of the leading equine geneticists in the country and an expert on feral herds. A previous study was completed in 1992 when Dr. Cothran was at the University of Kentucky.

In his 2008 presentation, "Management Strategies for Small Gene Pools," Dr. Cothran states that "small populations are subject to loss of genetic variation

and that loss of variation can lead to specific genetic diseases, heritable defects, reproductive problems or general reduction of overall vigor and extinction of the population." The Corolla herd is currently exhibiting heritable defects such as locked patellas, parrot mouth, and significant reduction in height in some horses (under 12 hands as an adult). Corolla's one maternal line is in contrast to the Shackleford herd which exhibits three maternal lines.

The Corolla herd represents one of the oldest and rarest strains of Colonial Spanish Horses. There is always a balance to be struck between keeping bloodlines pure and losing genetic diversity. In small, closed populations, only new mutations can increase genetic viability. Slight differences in mortality and reproductive success can have dramatic effects on a small population. When animals breed with close relatives, recessive genes are less likely to be balanced by dominant genes, and deformities become likely. A shallow gene pool can also decrease reproductive ability, size, and resistance to disease. When the census is low, the herd is vulnerable to destruction by catastrophic weather events or diseases. Dr. Cothran wrote in regard to the Corolla herd "Much of the genetic diversity expected to be present in a horse population is gone, and this cannot be recovered" (Cothran, 2008).

Cothran's 2008 study showed that the genetic diversity of the Corolla population is low and that both measures of heterozygosity were among the lowest that have been found in horses. "The genetic variability measures confirm the effects of a very small population in this herd over the past few generations...However the future rate of loss can be minimized by maintaining a larger effective population size" (Cothran 2008)

Dr. Cothran states that 150 is the common recommended population size for a wild herd, and is a minimum number and a compromise. In order to minimize loss of genetic variation, he recommends introductions. He further states that introductions of one or two young mares per generation can restore variation over time, but that the number of introductions depends on the current genetic situation.

The wild horses on Shackleford Banks have been managed by the National Park Service/Foundation for Shackleford Horses at a federally mandated number of 120 – 130 with never less than 110 since 1998 on 3,000 acres of habitat. Similar legislation to mandate this number for the Corolla herd has passed the United States House unanimously in 2013 and 2014. It will be reintroduced into the House in 2015.

At a meeting on January 24th, 2014 in Washington, DC., David Viker (Southeast Regional Chief of the National Wildlife Refuge System) stated that "the Service is not in the business of managing wild horses and is not concerned with the numbers". In addition, in a letter to Congressman Walter Jones received October 3, 2014, USFWS Regional Director, Cynthia Dohner wrote, "Please note we understand your genetic concerns and do not object to introducing horses from the Shackleford Banks herd into the Corolla herd. In fact, the 2013 draft plan allows for the introduction of Shackleford Banks horses." The Corolla Wild Horse Fund is concerned with the requirements for herd size and proposes to approach the topic with genetic health of the herd, ecological health of the island, and the assistance of peer-reviewed science to make the right decision.

The Corolla Wild Horse Fund has already demonstrated that it can successfully control the population through the delivery of immunocontraception, Porcine Zona Pelucida. The number of foals born has been reduced from 24 in 2007 to 2 in 2014. PZP has been extensively researched and provides a cost-effective and efficient manner for controlling herd size.

Considering the current scientifically-determined level of inbreeding and low level of genetic diversity; our field documentation of the location and habitat usage of the Corolla wild horses; scientific evidence that the presence of wild horses can be beneficial to ecosystems; and the fact that the current designated herd size of 60 selected in 1997 was not a decision based on science; the Fund is of the opinion that the Corolla horses should be managed at the same level as the Shackleford horses (120 to 130 with never less than 110) and that horses from Shackleford Banks should be introduced in a manner such that, accounting for potential offspring, the herd would not exceed a maximum population of 130.

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Appendices

Appendix A Historical Timeline
Appendix B Signatories and Participating Stakeholders
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Appendix E Definitions/Acronyms
Appendix F Barrier Consideration & Regulatory Issues
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Appendix A: Historical Timeline

1520	Spanish ship logs document horses brought to NC shores
1926	National Geographic states a presence of five to six thousand wild horses up and down the 175-mile Outer Banks
Prior to the 1980's	Wild Horse herd living in Corolla
1984	Road paved from Duck to Corolla Village
1989	Corolla Wild Horse Fund Committee of Outer Banks Conservationists, Inc. formed
1989	Currituck County adopted the Wild Horse Ordinance
1994	Currituck County and the Corolla Wild Horse Fund entered into a Management Agreement
September 1994	Ocean to sound fence barrier installed at North Beach access ramp
June 1995	Proclamation issued by NCDCR: "The Corolla Wild Horses are one of North Carolina's most significant historic and cultural resources of the coastal area."
December 2002	Enclosure fence installed at NC/VA state line
2007	Horse of Americas Registry determines that the Corolla Herd is eligible for registration as Colonial Spanish Mustangs
2007	DNA testing documented the decline of genetic diversity and presence of only one maternal line.
July 2009	Section 3-31 of County Code of Ordinances Wild Horse Ordinance amended to include the word "intentional"
June 2010	House Bill 1251 declares the Colonial Spanish Mustang as the official North Carolina State Horse
December 2010	Section 10-55 of County Code of Ordinances updated to prohibit domestic horses from the end of NC terminus to the NC/VA border
February 2, 2012	CWHF transported a Corolla stallion to NPS at Ocracoke.
June 22, 2014	DNA samples pulled from two Shackleford stallions.
November 20, 2014	One of the previously tested Shackleford stallions was released in Corolla.

Summary of Legislation: H.R. 306 Corolla Wild Horses Protection Act

- Passed the US House of Representatives unanimously on February 6, 2011
- Referred to the Environment and Public Works Committee in the US Senate and became S3448 sponsored by Senator Kay Hagan (D) NC and co-sponsored by Senator Richard Burr (NC).
- CWHF agreed to the removal of language requiring USFWS to provide peer reviewed science and a public hearing prior to erecting fences on the CNWR refuge.
- CWHF agreed to cap the herd at 130.
- The committee never scheduled the bill for markup and the year ended with no action.
- Congressman Walter Jones reintroduced the bill into the US House of Representatives as H.R. 126 on January 3, 2013.
- H.R. 126 referred to House Natural Resources Committee.
- February 2, 2012: The Corolla Wild Horses Protection Act was passed unanimously by the United States House of Representatives.
- March 21, 2012: The Corolla Wild Horses Protection Act was received by the US Senate Committee on Environment and Public Works.
- June 3, 2013: The Corolla Wild Horses Protection Act was passed unanimously by the United States House of Representatives.
- June 4, 2013: The Corolla Wild Horses Protection Act was received by the United States Senate.
- June 9, 2014: The General Assembly of North Carolina passed House Resolution 1257: A House Resolution Urging Congress to Protect the Corolla Wild Horses.
- Congressman Jones plans to reintroduce the bill in January 2015.

Appendix B: Signatories and Participating Stakeholders

SIGNATORIES

Corolla Wild Horse Fund

The Corolla Wild Horse Fund (CWHF) is a 501 (c) 3 nonprofit whose mission is to protect, preserve, and responsibly manage the herd of wild Colonial Spanish Mustangs roaming freely on the northernmost Currituck Outer Banks, and to promote the continued preservation of this land as a permanent sanctuary for horses designated as the State Horse and defined as a cultural treasure by the state of North Carolina. The CWHF employs four full time staff, two part time staff, and five to nineteen seasonal staff. Additionally, there are seasonal employees (5-7 staff) from Memorial Day to Labor Day.

County of Currituck

The County of Currituck, a body politic empowered under the Statutes of North Carolina, feels that the wild horses on the Currituck Outer Banks are a significant part of the county's history and traditions worthy of protection. In 1989, the County adopted a Wild Horse Ordinance for protection of these animals on private properties and has worked with the Corolla Wild Horse Fund in this regard. Since the wild horses have roamed for generations and existed on properties acquired by the U.S. Fish and Wildlife Service and North Carolina Department of Environment and Natural Resources, the County feels it important that the Currituck National Wildlife Refuge and NC National Estuarine Research Reserve incorporate the existence of these animals into their management plans.

North Carolina National Estuarine Research Reserve

The North Carolina National Estuarine Research Reserve (NCNERR) is a multi-component program that includes the Currituck Banks Reserve, a 965 acre site with approximately 326 upland acres located on the Currituck Outer Banks. The Currituck Banks component of the N.C. National Estuarine Research Reserve contains 326 acres of uplands and marsh. The NCNERR is managed as a state-federal partnership between the North Carolina Division of Coastal Management (DCM), an agency within the North Carolina Department of Environment and Natural Resources, and the National Oceanic and Atmospheric Administration (NOAA). The NCNERR is one of 28 reserves located around the country that together form the National Estuarine Research Reserve System which is implemented by NOAA. . The NCNERR is part of the DCM's Coastal Reserve Program which protects designated sites for research, education and compatible recreational uses. The results of research, education and stewardship activities are used to enhance public awareness concerning coastal issues and to improve coastal management in North Carolina. As such, each site within the Coastal Reserve Program serves as an undisturbed example of local biodiversity and natural processes, a living laboratory for researchers and an outdoor classroom for educators.

The NCNERR is managed according to federal regulations (U.S. Dept. of Commerce 15 CFR Part 921), and the Coastal Reserve Program which contains the NCNERR is managed according to state statutes (N.C.G.S. 113A-129.1-3) and departmental rules (NCAC T15:7O). A formal management plan for the NCNERR also guides management of the Currituck Banks component (2009-2014). In addition, the Currituck Banks Reserve is designated as a dedicated State Nature Preserve by the North Carolina Council of State.

The presence of feral horses on the Currituck Banks Reserve is described in the 2009-2014 NCNERR management plan. These animals are not owned by the State because they roam many public and private properties on the northern Outer Banks. Relative to site management, the horses (regardless of genetic or historical background) are non-native animals that represent a management conflict because they consume and trample vegetation and interact with wildlife that occurs naturally on the Reserve site. The presence, activities, and wastes of the horses alter the natural processes the Reserve protects. The State will allow feral horses to roam freely on the Currituck Banks Reserve provided the animals do not significantly impact the natural habitats, wildlife or use of the site for research and education. In an effort to be consistent with the aforementioned rules and guidelines, the site shall be managed to avoid any significant impacts from these horses. The Reserve will take necessary management actions, such as fencing impacted habitat and establishment and monitoring of exclosures, as needed to protect its resources from the impacts of feral horses. The Reserve program recognizes the strong public sentiment associated with the Corolla horse herd and will work with all parties to develop and implement a feral horse management plan that will protect natural habitats on the Reserve while protecting horse health and public safety.

The Reserve acknowledges the need for the CWHF to enter the Currituck Banks Reserve for the purpose of managing the wild horse herd in accordance with this plan. This includes monitoring, darting, and other activities as necessary provided that impacts to Reserve habitats are kept to a minimum. Reserve personnel shall be notified and consulted in advance of work to be conducted or as soon as practicable in the event of an emergency.

Currituck National Wildlife Refuge

The Currituck National Wildlife Refuge (NWR) is a unit of the National Wildlife Refuge System which is managed by the U.S. Fish and Wildlife Service. The mission of the National Wildlife Refuge System is to administer a national network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

The purposes for establishing the Currituck NWR are "... for use as inviolate sanctuary, or for any other management purpose, for migratory birds." 16 U.S.C. S 715d (Migratory Bird Conservation Act) and where "... suitable for - (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species..." 16 U.S.C. S 460k-1 (Refuge Recreation Act).

As is outlined above, the refuge was established to manage for specific trust wildlife species including waterfowl, migratory birds, and endangered species. The Service views the wild or feral horses as non native wildlife. A feral animal is defined in 50 Code of Regulations 30.11(a) as "... animals, including horses, burros, cattle, swine, sheep, goats, reindeer, dogs, and cats, without

ownership that have reverted to the wild from a domestic state..." The Corolla horses were introduced to the ecosystem by man. Although there may be some debate as to whether locals released domestic animals on to the Outer Banks to graze in the recent past or they were brought by Spanish explorers 300-400 years ago, they are still an introduced domestic animal which is not native to this ecosystem. The horses compete with native wildlife species for resources. The Service will address these animals as feral and manage the refuge in that context. As time and money allows and as monitoring shows negative impacts, the current fenced areas will be maintained and additional areas may be fenced based on monitoring results that indicate unacceptable levels of impact to migratory bird habitats on the refuge.

PARTICIPATING STAKEHOLDERS

Corolla Citizens

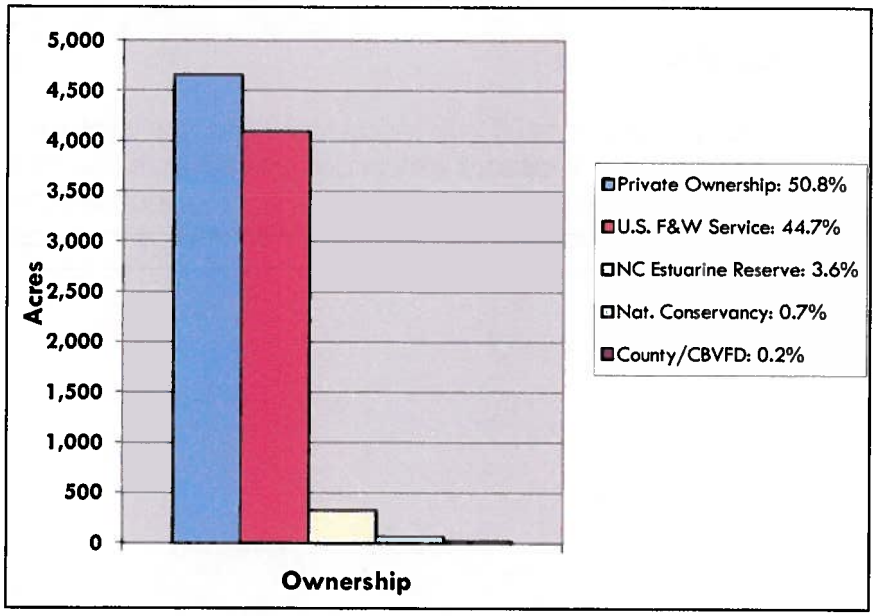
The appointment of two residents of the Currituck Outer Banks adds to the quality of CWHAB decision making. The influx of thousands of seasonal visitors compared to the small winter population provides a perspective that cannot be replicated. Resident participation enhances insight about wild horse/human interaction and the unique experience of living in a remote and often inaccessible community as well as the reality of living among the wild horses on a day-to-day basis.

Appendix C: Land Use Information

The Currituck northern Outer Banks (i.e. Wild Horse Sanctuary) encompasses 9,156 acres (excluding platted rights-of-way) from the ocean to sound fence barrier at the North Beach Access ramp north to the Virginia state line. This area has no paved roads with primary access along the beach strand via 4-wheel drive vehicles. Provisions in the conveyance deeds from The Nature Conservancy to the United States and State of North Carolina for portions of the National Wildlife Refuge and Estuarine Reserve effectively prohibit construction of an upland access route to the platted areas of the northern beaches. These covenants specifically prohibit the building of roads or changes in the topography of the land.

As shown in Figure 1, the U.S. Fish and Wildlife Service is the single largest property owner on the northern Outer Banks with 4,093 acres of the total land area. The Currituck Banks National Estuarine Research Reserve contains 326 acres of uplands and marsh. With the exception of an ocean to sound strip of ±62 acres owned by The Nature Conservancy and 17 acres under the ownership of Currituck County and the Carova Beach Volunteer Fire Department, the remaining northern Currituck Outer Banks is owned by individual private property owners. While the majority of private land was platted in the sixties and seventies and is still vacant, it is evident that platted subdivisions will be developed over time. As of December 31, 2012, 640 dwellings (20.1% of total platted lots) have been constructed on the 3,178 platted lots. As shown in Figure 2, new residential dwelling permits have ranged from 5 (2012) to 37 (2006) permits per year with an average of 19.7 homes built per year during the 2001-2012 period. Since 1989, the maximum density for any new development is one unit per 120,000 square feet.

Figure 1.

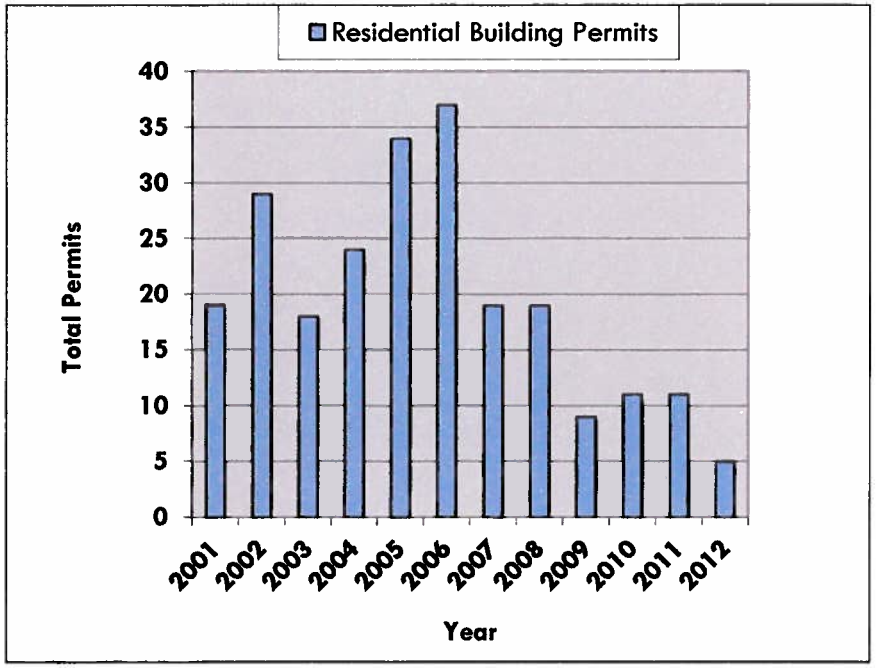


The 2006 Land Use Plan estimates the rental home inventory for the Outer Banks (including Corolla and the off-road area) will increase by 150 houses per year. If this holds true, the estimated peak seasonal population for the Outer Banks will increase from 52,399 in 2000 to 75,688 in 2025. The projections in the Land Use Plan are based on a high-growth scenario of rental homes averaging 6 and 7 bedrooms per house. The recent decline in the housing market has

diminished the actual number of houses constructed per year; however, there appears to be a trend toward larger rental houses that include a higher number of bedrooms. Anecdotally, this may maintain the population estimates associated with a high-growth scenario, without the projected increases in housing stock.

One of the unique aspects of the Currituck northern Outer Banks wild horses, when compared to other barrier island wild horse populations, is that the horses travel and live on both public and private lands. This uniqueness will obviously impact the goals and actions included in the management plan.

Figure 2.



Appendix D: Adopted Legislation and Ordinances

Department of Cultural Resources Proclamation June 1995

House Bill 1251 Designates Colonial Spanish Mustang as North Carolina State Horse

Currituck County Code of Ordinances
- Chapter 3, Article II. Wild Horses
- Chapter 8, Article IV. Outdoor Tour Operators
- Chapter 10, Article II. Division 2. Vehicles and Horses on Outer Banks

Appendix E: Definitions/Acronyms

Exclosure Fence – fences erected to exclude horses from habitats to allow natural ecosystem function or specific management action.

Study Exclosure – Fences erected to establish long-term monitoring areas to be used for assessing impacts to habitats by wildlife and/or feral animals.

Herd Number – The current ESTIMATED population size. Synonymous with Population.

Population - The current ESTIMATED population size. Synonymous with Herd Number.

Aerial Survey Results- The current MINIMUM population estimate.

Inoculations – The number of different horses administered at least 1 dose of contraceptive.

Doses – The total number of contraceptives successfully administered annually.

Ecological Balance – A state of dynamic equilibrium within a community of organisms where conditions present the opportunity for each member to successfully contribute it's natural processes in nature.

SFR Zoning District – Single-Family Residential-Outer Banks Remote District

Off-road Area – that area of the county on the Outer Banks from the terminus of the paved portion of N.C. Highway 12 to the Virginia state line

Appendix F: Barrier Island Consideration & Regulatory Issues

BARRIER CONSIDERATION

The Advisory Board considered barrier options as part of its current update of the Currituck Outer Banks Wild Horse Management Plan. The following options were considered:

1. Maintain the barrier fences at the northern and southern boundaries of the Wild Horse Sanctuary;
2. Remove the barrier fences at the northern and southern boundaries of the Sanctuary;
3. Remove the herd from the Currituck Outer Banks; and
4. Designate pasture areas for the horses with or without perimeter fences.

The Board determined that option 1 is the best course of action for the next 5 years to meet the goals and objectives outlined in the plan and for the following reasons:

- Option 2: Removal of the fences is not a viable option at this time as the horses would roam south into Corolla and north into Virginia likely resulting in an increase in horse/human interactions and horse deaths from vehicular accidents, similar to the situation prior to the installation of the fences.
- Option 3: Removal of the herd from the Currituck Outer Banks would be highly unpopular because of the strong public sentiment associated with the horses and the historical nature of the horses.
- Option 4: Sufficient pasture areas do not currently exist to accommodate the horses on the Currituck Outer Banks. The Board recognizes this option as important and continued examination of this option is addressed in Goal 4, Actions 4A-C.

Barrier options will be considered with each 5-year update of the management plan as described in Goal 4, Action D and a recommended action adopted with each update of the plan. Options will be considered in light of the goals of the management plan, horse and human safety, habitat condition, and as land use changes within the fence barriers, i.e., private property development increasing and available habitat for the horses decreasing, and an increase in traffic and horse/human interactions over time within the barriers.

REGULATORY ISSUES

As part of the approval for satisfying the CAMA fence permit, the County is responsible for providing DCM with a report that details impacts to public lands. This report should address issues such as: monitoring efforts and land use evaluations.

The southern horse fence was first permitted in 1994 by variance by the N.C. Coastal Resources Commission (CAMA Major Permit No. 62-94). The letter from the N.C. Division of Coastal Management to Currituck County Manager Mr. Dan Scanlon dated October 13, 2006 provides a history of the permit and the conditions of the permit that the County must continue to meet. The original permit requires that the County develop a long-term management plan and evaluate the need for the fence which was originally permitted as a temporary structure. The Division determined in its 2006 letter that the fence may remain in place as long as the County updates the management plan every 5 years, adheres to the approved management plan, and the plan evaluates the need for the fence and recommends leaving the fence in place. Per this update of the management plan, it has been determined by the Division that no renewal or extension of the permit is needed since the management plan continues to recommend the southern fence as the preferred barrier option for the horses.

This plan provides a summary on current activities to assess horse impacts on public lands north of the southern fence that result from the horse herd to satisfy permit condition No. 1 issued in the 2001 renewal of the permit. The study titled "Vegetative Impact of Feral Horses, Feral Pigs, and White-tailed Deer on the Currituck National Wildlife Refuge, North Carolina" in 2014 by Kimberly Porter is the activity to assess horse impacts. Appendix C provides a summary of land use information within the wild horse sanctuary.

Appendix G: Protocols

PROTOCOLS

Aerial Census Protocol

The Primary Census window should be late August-early September to remain consistent with recent surveys and provide consistency among years. Multiple Censuses will be encouraged to improve results if funding permits. The Census will start near the south fence and will be in flown in east/west transects with each successive pass working northward at 0.10 mi intervals. Working the Census from south to north optimizes the aspect of the sun and observability by always keeping newly identified individuals north of the aircraft minimizing silhouetted animals. The aircraft should maintain a height of 150 feet and progress at approximately 25 kts.

When an individual/group is located, if in the estimation of those conducting the census, the individual/group will not exceed the 0.10 limit of the next transect the aircraft should circle them until all individuals are counted and certified. Due to the increasing development of the area deviations in either route or elevation may be required to avoid public disturbance. To the extent practicable deviating from both should be avoided. Total survey time should be under 3 hours using the described method.

Weather conditions should resemble light winds and sunny. Increasing cloud cover beyond 70% shows most individuals as shadows and increases the probability of missing animals that would otherwise have been seen. Light winds are also preferable from both an observer comfort and safety perspective. "Low and slow" surveys are considered special purpose flights due to increased risk to participants.

Any discrepancies in count must be reconciled while circling a particular individual/group to avoid error totaling results. Prior to departing the airport total count should be reconciled. This count represents the minimum number of individuals in the population.

Protocol for the Treatment of Horses with Porcine Zonae Pellucidae Contraceptive Vaccine

I. Purpose

This is an action designed to adaptively manage the Corolla wild horse population through the use of a native porcine zonae pellucidae (PZP) contraceptive vaccine delivered remotely under field conditions. On an annual basis, mares will be selected by program criteria to receive the vaccine. The method of delivery will be Pneu-Darts with a projector/capture gun appropriate to the darts and distances. Contraceptive efficacy will be determined by foal counts.
Participants:

Supervision of Project:	Executive Director Corolla Wild Horse Fund, Inc. (CWHF)
Vaccine Preparation:	Science and Conservation Center (SCC), Billings, MT
Designated Darters:	Herd Manager Corolla Wild Horse Fund, Inc. Science and Conservation Center, Billings, MT Others as certified
Project Veterinarian:	Dominion Equine Others as licensed

II. Procedures

A. Vaccine Preparation and Shipment: Vaccine will be prepared by the Science and Conservation Center, Billings, MT. and shipped on dry ice under Food and Drug Administration authority (Investigational New Animal Drug exemption No. 8857 G0002 & 0003). FDA form "Notice of Drug Shipment" will be completed for each shipment of the PZP vaccine and filed at the Science and Conservation Center, Billings, MT. At CWHF, the vaccine will be stored frozen at CWHF headquarters under the supervision of the Herd Manager.

B. Selection of Subject Horses: The number and identity of animals will be selected and approved by CWHF personnel before darting commences. Selection will be made on the basis of predetermined population management goals.

C. Delivery of Contraceptive Vaccine: Delivery of vaccine will be by means of 1.0 cc Pneu-Darts, with ¾" to 1 1/2" barbless needles. 0.5 cc of the PZP vaccine (in phosphate buffered saline or sterile water) will be emulsified with 0.5 cc of adjuvant and loaded into darts. This is done when the decision to dart has been made; fresh emulsion is desired. Mares which have never been treated will be treated with PZP plus Freund's Complete adjuvant, while those which have been previously treated will be given PZP plus Freund's Incomplete adjuvant. Designated darters will mix the vaccine with adjuvant and prepare the emulsion. The vaccine-adjuvant emulsion will be delivered by means of the appropriately chosen projector given the dart and distance.

Any opportunity will be taken to administer scheduled contraceptive initial or booster injections to horses within handling distance when the contact is within the appropriate injection time period. Hand injection affords good control over the location of the injection.

Authorized individuals will have successfully completed the Science and Conservation Center's training program. It is strongly recommended that individuals involved in darting apprentice with an experienced field darter over a period of seasons and stay involved in continuing field and classroom education.

The decision to dart a horse will ultimately rest with the darter. The accessibility of the horse at a particular point in time and location will trigger the decision-making process. Safety, for both humans and horses, is the foremost consideration in the decision to dart and the darting of a mare.

On days when a rifle (with a sight) will be used, several practice shots must be taken in the morning, before going to the field, in order to assure that the gun is properly sighted. Practice shots are expected when projectors without sights are used.

At all times the equipment will be maintained in the safety-conscious manner of any firearm.

Only hip or gluteal muscle regions of the horse are acceptable targets. No shots will be taken in high wind or when the horse is standing at an angle where the dart could miss the hip/gluteal region and hit the rib cage. The ideal angle is when the dart will strike the skin of the horse at a 90° angle.

The projector/capture gun will be chosen based on the dart, distance, and darter's expertise/preference. The objective will be to place the dart as accurately as possible, with enough velocity to discharge the vaccine and eject the dart but while avoiding excessive force. Each darter will work at the firing range to determine the appropriate charge/pressure to be used for the distances encountered for the projector and dart(s) used. Each darter will construct a matrix of setting variables. The darter will know, and stay within, his/her abilities to fire the projector of choice at distances.

In many cases it is ideal that no more than two people be present at the time of darting. The second person will aid in locating fired darts, educate any onlookers and keep them safely out of the way. When additional approved persons are present (darters in training from another site, for example), every effort will be made to avoid interference. No shot will be taken when other persons are within a 90° angle defined by a line from the shooter to the horse. To the extent possible, all darting will be

conducted out of sight of non-participants or island visitors. However, if the darting is done within sight of non-participants, effort will be made to contact and explain the nature of the project to the observers.

The projector will remain unloaded until the horse has been selected and it is safe to shoot. If a horse moves out of firing range after the projector is loaded and it is apparent that another shot will not be immediately possible, the projector will be unloaded (both cartridge and dart, as appropriate) and stored. The dart will be stored in a poly-foam container or the equivalent. Immediately after firing a rifle, the empty cartridge will be ejected and the dart port opened.

If a dart is not used before the end of the day, it will be stored under refrigeration. If not used the next day, the dart will be discarded in a safe manner.

Proper treatment of animals requires a clear mind. Decisions about veterinary care require careful thought and appropriate responses. Fatigue, common because of the hours and habitat associated with horse work, will be recognized. Weather, particularly but not limited to high winds, affects the work. The darter will be responsible for making the decision to cease work due to fatigue, weather, or any other factor.

D. Recovery of Darts: Attempts will be made to recover all darts. If possible, all darts which are discharged and drop from the horse at the shooting site will be recovered before another darting occurs. In exceptional situations, with the decision resting with the darter, the site of a lost dart may be noted and marked, and recovery efforts made at a later time. All fired darts will be examined after recovery in order to determine if the charge fired and the plunger fully expelled the vaccine.

E. Record Keeping: CWHF personnel will maintain records for the identification of all horses to be darted or for control purposes. These records will remain on file at CWHF. Each horse darted will be identified by an alpha-numeric number. For each horse darted, the following information will be recorded at the time of darting (and other notes should be made as appropriate):

1. date of inoculation
2. size of PZP dose
3. vaccine lot number
4. type of adjuvant
5. type of dart/delivery system
6. precise site of inoculation (right or left side)
7. name of darter

Additionally, other observations regarding estrous behavior, development of dart site problems, and other pertinent information collected by researchers or CWHF personnel will be maintained by CWHF.

The dates of first appearance of foals shall be recorded and maintained in the CWHF files, as well as, documented as part of the annual census.

Annually, updated copies of this data will be sent to the Science and Conservation Center in Billings. The SCC will in turn will submit them to the FDA as required.

F. Veterinary Emergencies: Personnel conducting darting operations shall be equipped with a two-way radio and/or cellular phone providing a communications link with CWHF headquarters. In the event of a veterinary emergency, darting personnel will work with the Project Veterinarian for advice and action as appropriate.

In the event that a dart strikes a bone and sticks, or imbeds in soft tissue, the darter will note the location and endeavor to follow the affected horse until the dart falls out or the horse can no longer be found. The location of the dart will dictate the extent of action to be taken (follow horse, seek veterinary assistance). The darter will be responsible for observation of the horse until the situation is resolved. The decision to capture or immobilize the horse for removal of the dart will be made in consultation with the Project Veterinarian.

Other injuries that may occur as a direct or indirect result of the darting process, such as broken bones or severe lacerations and infections, may also require the capture and/or immobilization of horses for evaluation and treatment. Any decision to capture or immobilize will be made in consultation with the Project Veterinarian. If possible, corralling techniques will be used to capture and contain injured horses. If, in consultation with the Project Veterinarian, the use of chemical immobilization drugs is deemed necessary and appropriate, such agents will be administered exclusively by the Project Veterinarian or by a member of the darting team under the Project Veterinarian's direct supervision. All injuries will be treated as per the recommendations of the Project Veterinarian.

In the event of a severe injury where the Project Veterinarian considers the prognosis for full wild/island recovery unlikely, the affected horse may be permanently removed to the care of the CWHF or may be humanely euthanized.

G. Blood Samples: Attempts to recover blood samples for antibody analysis should be conducted opportunistically.

H. Media Relations: All requests by the media should pass through the CWHF Executive Director.

I. Public Relations: Prior to the start of each season's darting, as deemed appropriate, the CWHF should notify all law enforcement agencies with jurisdiction on the island of the darting operation's start and finish dates, and that darters may be witnessed by members of the public shooting darts at horses with a capture gun. This will minimize panic calls from an uninformed public or at very least prepare law enforcement for explaining what is taking place.

J. Reporting: Data will be available for reports, prepared by the CWHF Herd Manager, documenting contraceptive program activities and success.

Corolla Wild Horse Fund, Inc. Wild Horse Euthanasia Policy

The American Association of Equine Practitioners recommends that the following guidelines be utilized in evaluating the need for humane euthanization. Each case should be addressed on its own individual merits and under no circumstances is sale for slaughter to be considered as an end of life decision.

Humane euthanasia of wild horses shall be employed:

- When an equine is not mobile and a veterinarian is of the opinion that mobility will not return;
- When the equine's quality of life is deemed, with veterinary guidance, so poor that euthanasia is the most humane option within the means of the organization;
- When an equine is experiencing continual pain for which there is no medical relief or the relief is not within the financial capability of the Corolla Wild Horse Fund.
- When an equine is affected by a degenerative medical condition for which there is no cure; or
- When an equine is dangerous to himself or herself or to other animals or humans.

Euthanasia shall only be administered by a licensed veterinarian, except in emergency circumstances where the equine is injured beyond recovery and is suffering irreversibly. In this case, the Corolla Wild Horse Herd Manager or Executive Director shall make the determination that euthanization should be immediate.
If the cause requiring euthanasia is not easily recognizable or apparent, a necropsy will be performed to determine the cause of death. The carcass will be transported by CWHF Staff to Dominion Equine Clinic in Suffolk, VA or the University of North Carolina School of Veterinary Medicine in Raleigh, depending on the circumstances of the death. If a criminal act is suspected, the horse will be transported to the University of North Carolina School for Veterinary Medicine in Raleigh, NC by the Currituck County Sheriff's Department.
If the cause is known, or a field necropsy would prove beneficial and can be performed by a licensed veterinarian on site, the carcass shall then be disposed of in compliance with all relevant laws.
Records of all euthanasias and necropsy results shall be kept on file in the Corolla Wild Horse Fund office.

ACCEPTABLE METHODS OF EQUINE EUTHANASIA
Pentobarbital or a Pentobarbital Combination: (preferred method)
This is the best choice for equine euthanasia. Because a large volume of solution must be injected, use of an intravenous catheter placed in the jugular vein will facilitate the procedure. In order to facilitate catheterization and minimize equine anxiety and stress, a tranquilizer such as acepromazine, or an alpha-2 adrenergic agonist should be administered.

CONDITIONALLY ACCEPTABLE METHODS OF EQUINE EUTHANASIA

Gunshot:

A properly placed gunshot can cause immediate insensibility and humane death. In some circumstances, a gunshot may be the only practical method of euthanasia. Shooting should only be performed by highly skilled personnel trained in the use of firearms and only in the jurisdictions that allow legal firearm use. Personnel, public, and nearby animal safety should be considered. The procedure should be performed outdoors and away from public areas.

For use as a method of euthanasia in horses, the firearm should be aimed so that the projectile enters the brain, causing instant loss of consciousness. This must take into account the brain position and skull conformation of the horse, as well as the energy requirement for skull bone and sinus penetration.

ADOPTION PROTOCOL

COROLLA WILD HORSE FUND, INC.

Because the safety and well-being of our horses is our primary concern, the following are required:

ADOPTER MUST:

- Must be 18 years old or older
- Have no prior violations of adoption regulations or convicted of inhumane treatment to animals and be financially able to properly house, feed and provide veterinary and farrier care for the horse(s).
- Have the ability, either personally or by hire, to train a wild horse, if the horse is not already trained.

FENCING AND CORRAL:

Facilities must meet these requirements and be completely finished before approval.

- An outside corral (20' x 20') that is sturdy and of sufficient height (at least 5' high) is required for veterinary and farrier services as well as for gentling the horse. NO BARBWIRE shall be allowed.
- All fencing should be made of rounded pipes, pole, wooden planks or similar materials that pose the least hazard to the horse. Small mesh, heavy gauge, welded or woven wire fencing with at least one plank at sight level is acceptable.

SHELTER:

A run-in shed attached to the corral, or a box stall, allowing the horse to move freely between the corral and shelter is required. Shelter or stall must be at least 12' x 12' per horse.

TRANSPORTATION:

Horses can be transported by the Corolla Wild Horse Fund for a fee of $.70 per mile. An additional $17.00 per hour will be charged, if transportation (or return from transportation) occurs on a Saturday or Sunday or any evening after 5 p.m. (Mileage rate is subject to change in relation to current fuel prices.)

Adopters providing their own transportation, either with their own vehicles or hired transport must:

- Utilize standard covered stock trailers with no openings large enough for the horse to escape or to become entrapped.
- NO SINGLE HORSE TRAILERS, NO PICK-UP TRUCKS WITH STOCK RACKS
- Two horse trailers are allowed if the middle partition is removed.
- No horses may be tied.

CWHF has the right of final approval before any horse is loaded onto a trailer.

<u>Adoption fee:</u> $615. ($15.00 is for Horse of the Americas registration papers) A $100 deposit is required with application. The deposit will be refunded if the application is denied. All payments can be made with cash, check, credit card or money order payable to: CWHF, Inc.

COROLLA WILD HORSE FUND
INCORPORATED
* P.O. Box 361* 1126 Schoolhouse Drive* Corolla, NC 27927
Phone (252) 453-8002 Fax (252) 453 -8073
www.corollawildhorses.com * info@corollawildhorses.com

ADOPTION APPLICATION

Please be as complete and accurate as possible. Feel free to add additional sheets if needed and please call should you have any questions. Our goal is a successful long-term placement of the horse(s).

(Please print full name)

*Name(s)*_____

(Complete address - both physical and mailing)

*Address:*_____

Mailing address, if different than above:_____

*Home Phone #*_____ *Work #* _____*Cell or pager #*_____

Fax # _____ E mail Address:_____

Occupation(s):_____

Please give your reason for wanting to adopt a Corolla Wild

Horse:_____

Preference: Gelding: _____ Mare/Filly: _____ No preference: ____

Age: 1 – 2 yrs.:___ 3 or older: _____ Number of horses requested _____

(Stallions are available only to persons who qualify as a breed conservation site)

Have you ever been the primary caregiver of a horse? Please describe.

_____

_____

Please describe the facility where you will keep your Corolla wild horse, including acreage, type of shelter, and type of fencing.

_____

_____

Please provide your veterinarian's name, address, and phone number. Your signature on this application constitutes your authorization for your veterinarian to provide us with information about you and help us to monitor the well being of the adopted horse.

Name: _____

Address:_____

Phone:_____

I hereby agree that the above information is true, complete and correct, and I understand it will be the exclusive decision of the CWHF, Inc. to accept or deny the application. I further understand and agree to all parts of the adoption application and understand that this agreement is legally binding. In addition I further understand and agree to pay a non-refundable adoption fee of $615.00. A $100.00 deposit must be sent in with this application. The balance of $515.00 is due upon pick up of the horse. I also understand if I am not accepted, my $100.00 will be refunded to me by check from the CWHF, Inc.

Signature_____Date_____

Signature_____Date_____

This page is to be filled out upon receipt of a horse, do not write on this page!

Horse Assignment

Recorded Name of Horse and ID#_____

Sire and ID#_____Dam and ID#_____

Year Foaled_____Sex_____Color_____

Markings_____

(photograph and adoption certificate at time of adoption)

_____(Adopter) agrees to adopt and the CWHF Inc. agrees to transfer the horse described above according to the terms of the Agreement.

The agreement is governed by applicable federal and state laws and jurisdiction shall be in the appropriate venue closest the CWHF Inc.

This Agreement is entered into this the _____day of_____, _____at Corolla, North Carolina, Currituck County.

_____ _____ (ADOPTER)

(CWHF INC.)

COROLLA WILD HORSE FUND
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ADOPTION AGREEMENT

1. Adopter will have 60 days from the acceptance notification date of the preliminary adoption application to complete facilities as described in the application. Adoptions will be finalized only after facilities have been completed an approved by CWHF.

2. Upon notification of approval for adoption, adopter will have 60 days to pick up the horse(s), or arrange for the Corolla Wild Horse Fund to transport. After 60 days, a boarding fee of $10.00 per day will be charged per horse up to 15 additional days. At the end of the 15 day extension, the agreement will become null and void and the $100.00 adoption deposit will be forfeited.

3. If the CWHF decides that the 60 day pick-up requirement should be waived for the benefit of the horse (example – health issue), no boarding fee will be charged.

4. Examination of the horses prior to the adoption is the sole responsibility of the adopter. The CWHF will provide all past health records to the adopter at time of pick-up.

5. In the event that the adopter relinquishes the horses to the CWHF during the first year of possession, the adoption is null and void, with all fees forfeited.

6. The horse(s) must be kept and maintained in good condition in a compliant facility. Horses not properly kept may be repossessed by an agent of the CWHF and adoption fees will be forfeited.

7. The adopter may not give, transfer, sell, or otherwise dispose of the adopted horse(s) within the first year of adoption.

8. CWHF reserves first right of refusal if an owner cannot keep the horse(s).

9. If the adopter wishes to give, transfer, sell or otherwise relinquish the adopted horse(s) from their care, the Corolla Wild Horse Fund, Inc. must be notified and the new adopter must be approved by the Fund. If the new adopter is NOT approved, the Corolla Wild Horse Fund retains the right to repossess the horse(s).

10. If the transfer of ownership is approved by the Corolla Wild Horse Fund, it becomes the responsibility of the new owner to transfer HOA registration to their name.

11. CWHF representatives retain the right to check on the horse(s) at any time.

12. If the horse becomes deceased, adopter must notify CWHF within 48 hours.

Sign and date if you understand and agree to all the conditions listed above.

Signature:_____ Date: _____

Response to Problem Horses

The general nature of the Colonial Spanish Mustang breed is to be gentle, curious, and extremely intelligent. They are an ancient breed that is listed as critically endangered/nearly extinct. The wild CSMs residing on the Currituck Outer Banks have approximately 7,544 acres of accessible land north of Corolla. The Corolla Wild Horse Fund has divided the area into Zones 1 through 4 and documents the harems and bachelors living within each zone. Zone 2 (Currituck National Wildlife Refuge) is the only Zone without residential dwellings. According to the Currituck County Planning Department (July 20, 2011), there are 3,150 platted lots with 661 approved dwellings (20.9% built out).

The 11 mile stretch of beach from the RT 12 terminus to the VA/NC line is considered to be a public road. No permitting restrictions exist except for a requirement that all ATVs be permitted. A 2010 traffic count documented over 1,200 vehicles driving on the beach with over 3,500 passengers in a 12 hour period. The count was done only on northbound vehicles.
The existence of 661 dwellings combined with thousands of people to occupy them and thousands of vehicles to transport them creates management challenges not experienced by any other wild horse management entity. In addition, it is estimated that each of the 10 commercial wild horse tour companies take an average of 10,000 customers annually onto the north beach. The influx of thousands of people and thousands of vehicles has a demonstrable effect on horse/human interactions.
Although there are a multitude of signs and a wide variety of education methods in place, violations of the Currituck Wild Horse Ordinance occur with great frequency, especially from Memorial Day to Labor Day when tourism is at its peak. The two most frequently observed violations are intentionally approaching wild horses closer than 50 feet and feeding.
Both approaching and feeding have habituation as a consequence. As a result, the wild horses have developed varying degrees of tolerance for proximity to humans:

Habituated: Accepts the presence of humans but moves away when approached or when actions are taken by humans to drive horse away. Will consume human food if offered or left in an accessible location.

Severely Habituated: Approaches vehicles and will put their head in a window or sniff occupants in an open vehicle. Readily approaches humans and does not move away when approached. Tolerates human touch. A high degree of action is required to move the horse away.

Problem: Challenges humans for food; approaches humans under beach umbrellas, sitting in beach chairs, etc. on a regular basis; consistently overturns garbage cans; bites clothing or skin; refuses to move from a location. A horse deemed a problem horse jeopardizes the safety of persons or property.

<u>INDIVIDUAL HORSE INTERACTIONS</u>
The direct interactions between horses and humans result from both the horse's curious nature and the opportunity for people to intentionally or accidentally interact with horses
Horses in the developed areas are exposed, both actively and passively, to readily available human food sources. In general, horses learn about human food by receiving handouts or by following habituated horses. The behaviors of raiding garbage cans, tents and coolers is a behavior primarily passed on from horse to horse. Learning to exploit this available food probably

depends primarily on whether the horse is a resident or migrant, and also to a degree the age at which the horse is introduced to human food.

It is not uncommon for interactions to occur simply due to a person's close proximity to horses. As social animals, there are constant hierarchical exchanges. Mares are often stolen from rival stallions and fierce fighting between stallions is common. There are also individual reactions to insect bites, thirst and grooming needs. Horses react to individual and band pressures with little or no regard to proximate humans, and their resulting actions can and do result in human impacts. Humans may be bitten, kicked, knocked down or stepped on as the horses interact with each other or respond to outside stimuli. There are also some horses that simply don't tolerate close interactions with people.

Response Procedures

The CWHF employs the use of dashboard cameras that record continuously and staff wear wireless microphones.

If a CWHF staff/ volunteer observes visitors feeding or petting a horse, or standing at a distance that appears to be too close for the particular situation, that staff/ volunteer should approach the person and inform them of Currituck County's Wild Horse Ordinance and the potential dangers of horse interactions. These may include vehicle accidents, bites, kicks, and/or property damage. A brochure or other relevant handout should be distributed. If the individual(s) continue the noncompliant behavior they should be told that charges will be filed against them if they do not comply immediately. If noncompliance continues or the individual(s) become threatening, law enforcement should be called. (252-232-2216 non- emergency/911 emergency)

When CWHF staff/ volunteer observes or receives a report of a nearby horse feeding, the staff/ volunteer should verify the location, activity, and the behaviors of visitors in the area. When the CWHF employee/ volunteer verifies that people are interacting with horses, (feeding, petting, dumping food, chasing etc.) the violators should be informed about the Currituck County Wild Horse Ordinance and that they are violating the law. If they refuse to comply, or become combative, a law enforcement officer should be requested to investigate the incident. A photograph or video of the incident should be taken if the staff or volunteer can safely do so if they are not in a camera equipped vehicle.

Staff/volunteers responding to potential problem horse interactions should have basic training in: safety around horses; how to move horses (distraction techniques); how to safely separate horses and the public

When a trained person responds to a horse incident, they should try to ascertain whether the interaction was:

1) accidental – person(s) unintentionally too close to a horse, or normal behaviors resulted in property/persons being affected.
2) intentional – person(s) intentionally approached, enticed or lured the horse.
3) food instigated - horse responded to the presence of accessible food, or
4.) problem horse behavior - horse's action appears to have resulted from some aggressive intent.

Accidental or Simple Habituation:

The most common horse interaction scenario in the developed area involves horses harassed by insects, people scaring or crowding horses, stallions herding their bands, or multiple stallions fighting or causing a stampede. During these events, people may be bitten, kicked, pushed or knocked over, vehicles dented, or tents knocked down.

An interaction resulting from an accidental encounter will normally rectify itself. Visitors may need advice on keeping a safe distance from horses or horses may need to be moved from the immediate area.
If a horse has a simple habituation it will often discontinue feeding when approached by people or following some simple distraction. Basic distraction techniques include walking purposefully towards the horse, speaking in a loud firm voice, waving and clapping hands, whistles, waving a branch, tapping with a lounge whip, etc. Distraction techniques should not spook the horse into running, especially if there are people or moving vehicles in the area. Use only enough pressure to get the horse walking away from the site.

Food Instigated Interactions:
A horse responding to food could be behaving under any of the levels of habituation. Horses that are severely habituated will be reluctant to leave an area with food, and after being displaced, will likely return for the food soon after distraction techniques are stopped.
The responding staff/ volunteer should assess the situation and the horse's response to human presence and actions. Distraction techniques should not spook the horse into running, especially if there are people or moving vehicles in the area. Only enough pressure to get the horse walking away from the site should be used. Begin with basic distraction techniques in order to move the horse away from the food. Intermediate techniques include running towards the horse, shouting, waving a towel or shirt, cracking a whip near the horse, etc. The highest level of distraction is the use of a whip on the hindquarters of the horse (in most cases this is not an appropriate technique in view of the public). When running towards a horse in an attempt to scare it off, initially run towards the head. Then when the horse has started to move off, continue approaching it from the rear, or side if you are trying to turn it. Whenever you approach a horse from the rear or side, always stay clear of the horse's kicking range. During all levels of distraction, be sure that the public and moving vehicles are not in the path in which you intend to move the horse. Also, be aware that a horse may not move in the direction you choose. Problem horses can be very stubborn. You must communicate aggression to the horse to get it to move. They will ignore a timid or tentative effort, and at worst could turn on you, though this is an unlikely reaction for all but the boldest horses.
Once the horse is moved from the scene, the food should be secured and the violator served with the appropriate level of enforcement.

Problem Horse Behavior:
When a report is filed which indicates the activities of a potential problem horse, the closest available staff or volunteer should respond to verify if the horse is still at the reported location.
If the horse has moved on, the responding individual should verify the incident. If the activity indicates a problem horse situation, and the horse can be identified (photo, video, etc.) a Data Sheet (Appendix A) should be filled out as completely as possible and forwarded to the Herd Manager. If there is no information as to which horse caused the incident, a verbal or written message including the damage, location and time, should be directed to the Herd Manager. If similar incidents are occurring frequently, a note listing multiple incidents is preferred.
If the horse remains at the scene of a human injury or property damage, a trained response person or the Herd Manager should be notified immediately and dispatched to the scene in order to prevent additional injury or property damage. In the event that the Herd Manager is not available or too far away to respond in a timely fashion, the Executive Director should be called. Until they arrive on the scene, the responding individual should continue to make observations of any behaviors and insure the safety

of any other employee/volunteer or visitor. All injuries should be handled under the normal EMS response (see also the Horse to Human Injury section).

Whenever a CWHF staff/volunteer responds to a problem incident, they should fill out a Data Sheet including a description of the behaviors (list your observations under the Horse's Condition section). A horse that begins to show constant aggression to humans, vehicles or inanimate objects may be suffering from a disease or a head injury.

Working with Harems

Other than direct interactions with visitors and their property, horses can cause management concerns simply by their presence and numbers at particular locations. Common harem activities which may cause concern include:

1) multiple groups on the beaches
2) roadside or beach presence causing traffic congestion

1. Multiple horse groups on the beaches

During severe biting insect infestations or days with high heat and humidity, many of the horses will spend a good portion of their time on the beach. These horses are under stress from several sources, including insect bites, heat, the need to control mares, and keeping a distance from other stallions. Fighting stallions and running bands are common. Mixing highly stressed horses and crowded beaches and vehicular traffic increases the potential for injuries.

Response Procedures

Stallions tolerate each other fairly well in crowded beach situations, so in most cases the harems should be left alone. Staff/volunteers working around the beaches should keep an eye on stallions since they will initiate most interactions. As long as they are lying down, resting a hind leg, standing with neck horizontal and ears relaxed or interacting only with members of their own harem, they may be left alone. If two stallions begin to show behaviors such as walking towards each other with heads raised and ears forward, standing with muzzles together, necks arched and squealing, visitors around the stallions should be alerted that the horses may begin fighting and that they may want to move.

It is easier and safer to move people than to attempt moving horses. Under most situations, simply monitor the horses and advise at-risk visitors when horse interactions are likely. Only trained personnel should attempt to move horses. Only under extreme conditions should an attempt be made to move horses on a crowded beach, and then, only if enough personnel are on hand to do it safely.

If an attempt is made to move horses on a crowded day, there must be enough personnel to clear all visitors out of the intended pathway before the move begins. An effective method is to clear a path for the horses toward the dunes, if possible. The move must be slow. If any horse in the band begins to trot or run, the push should cease until the fast moving horse stops. If a horse begins to turn to the high beach, the push should stop until the individual horse is pushed back over the dunes.

If the stallion is too reactive or the flies too bothersome, there is not much a staff/volunteers can do to alleviate the situation. The horses should be monitored and all visitors educated to stay within the 50 foot law.

Roadside bands causing traffic congestion
Horses along developed area sand roads, on the beach, on the dunes, and the terminus of RT 12 draw the attention of many visitors. During high visitation days, visitors stopping for a view of horses can impede traffic flow and hamper travel.

Response Procedures
Staff/volunteers should use their discretion when a traffic jam is observed along the primary roads. Patience and a little time may be all that is necessary before the situation is resolved. For particularly bad traffic jams when random driving and numerous pedestrians result in a safety concern, law enforcement should be called in order to restore normal traffic flow. A trained staff or volunteer should move the horses off of the road first. Generally when the horses move off most visitors will return to their vehicles and continue on their way. They may be moved through normal distraction techniques. Horses should be moved slowly, and an attempt should be made to keep all horses to the same side of the road. Watch for moving vehicles, bicycles and bystanders when you begin.

Horse to Human Injury
Horse bites may result from either accidental or intentional horse behavior. Because of the power of a horse's jaw muscles, the resulting injury could be severe. In addition, a horse bite could transmit the rabies virus. Although rabid horses are rare, the current County Health Department protocols state that any mammal bite should be treated as a potential rabies exposure. In addition, any person witnessing a mammal bite is required by law to report that bite to Currituck Animal Control.
The response to horse bites should address three concerns:
1) the extent of the injury
2) the potential for disease exposure
3) identifying the responsible horse

Response Procedures
Visitors are often embarrassed or frightened when bitten by a horse. Often, it is because they did something they know they should not have done. For this reason, they may not be totally honest in explaining the situation or the extent of injuries, and may not want to see law enforcement or emergency response personnel. CWHF staff receiving horse bite reports should encourage the injured party to seek the proper medical attention.
Whenever a staff/volunteer receives a report of a horse bite, they should inquire if the bite broke skin or may have caused internal injuries (bruised muscles or broken bones). If injuries are reported or evident, contact 911 for available emergency response personnel to evaluate the injury. If the party does not wish to contact emergency medical personnel, they should be informed that besides the injury itself, horse bites can transmit diseases including rabies and encourage them to have the injury examined/treated at a local medical facility. They should also be requested to report the bite to Currituck County Animal Control. Information on the person's name, address and phone number, and a vehicle description and license number should be collected if possible.

After emergency response procedures are attempted, the CWHF Executive Director should be notified as soon as possible.

Animal Control requests that a horse be monitored for 10 days following a human biting incident. For these reasons, the bite victim should always be asked if they could identify the horse in question (any unique color or markings, sex, or did they happen to photograph it). If the identified horse is still in the area, staff/volunteer should photograph the horse if possible, or make a written description of the horse. Especially if the horse is a solid, unmarked color, recording the number of other horses with it along with photos or descriptions and pattern sketches of any uniquely marked individuals in its band can be crucial in identifying the horse.
All horse bites should be referred to a local medical facility. If site treatment is necessary to prepare the patient for transport, it must be handled as a standard EMS response.

Human to Horse Injury

Any observation of a person(s) causing injury to a horse should be immediately reported to Currituck County Sheriff's Department by calling 911. A complete description of the individual(s) and any vehicles (including license plate) should be given to the investigating officer.
After reporting the incident to police, the CWHF Herd Manager or CWHF Executive Director should be notified. An accurate description of the horse (color, markings, color of mane and tail) and its last known location should be given to both the Sheriff's Department and CWHF.

Horse Removal
The decision to permanently remove a wild horse from its home area is based on the following:

- The horse has an injury or illness that is life threatening or impacts quality of life in a manner that ultimately threatens the horse's safety or survival.
- A foal that is orphaned or abandoned at an age that survival without its mother is not possible and all attempts to locate the dam are unsuccessful.
- Removal to reduce herd numbers to comply with public law.
- The horse is classified as a problem horse by the Herd Manager.

Criteria for removal for herd reduction:

- Males between the ages of 6 months and three years (unless the male to female ratio is 50/50 – then decisions regarding sex will be based on harem composition. Age criteria will remain the same). Young bachelors are preferable in order to not break up existing family groups.
- Horses with locking patellas or other physical abnormalities.

Capture:
Capture will be accomplished through gentle, safe, natural horsemanship techniques. Tranquilization drugs should be used only if immediate emergency treatment of a horse is necessary to stabilize the horse for transport; if the horse is at risk for serious injury during transport; or for the safety of staff and/or an attending veterinarian. The use of ropes or other types of restraints during capture is not permitted unless required for the purpose of rescuing or removing a horse from water or other dangerous confinement.

Transport:
Captured horses will be transported in a stock trailer large enough for them to safely turn around. No horse will be tied in a trailer.
Care and Housing:
Captured horses will be transported and housed at a facility appropriate to contain wild horses. A licensed veterinarian will examine the horse(s) and assess their health and dietary needs. All captured horses will be given coggins tests, vaccinated against equine diseases, and receive any other tests and procedures as recommended by the veterinarian.
In the case of a severely injured or sick horse, the veterinarian will assess whether the horse requires hospitalization at Dominion Equine Clinic in Suffolk, VA, can be successfully treated at the facility where they are housed, or is in need of humane euthanasia.
Because the diet of the Corolla horses in the wild is not supplemented with domestic horse food such as hay or grain, the transition to domestic horse food will not be instantaneous. Captured horses must be monitored daily by the Herd Manager or his/her designee to ensure that the horse's nutritional requirements are being met. In the case of orphaned foals, bottle feeding with Unimilk or a similar product must be done on a 4 to 6 hour schedule until the foal is capable of drinking water, milk replacer, and pelleted food.
Once the horse's health condition has been resolved, gentling and training will begin in order to ready the horse for physical adoption.