United States Department of Agriculture

Marketing and Regulatory Programs

Animal and Plant Health Inspection Service

Population Reduction of Nilgai in the Boca Chica Beach, Bahia Grande, and Brownsville Navigation District Areas, Cameron County, Texas

Environmental Assessment, June 2014

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Table of Contents

I. Introduction

A. Background

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services is responsible for protecting and improving the health, quality, and marketability of U.S. animals, animal products, and veterinary biologics by (1) preventing, controlling, and/or eliminating animal diseases, and (2) monitoring and promoting animal health and productivity. The authority for the mission of Veterinary Services is found in the Animal Health Protection Act (7 United States Code 8301 et seq.).

Cattle fever ticks were introduced to the New World through livestock brought from other countries by colonists and explorers in the early 1500s (Anderson *et al.*, 2010). These tick species once occurred in large areas of the United States, and occasional incursions from Mexico still occur in and close to the permanent quarantine or "buffer" zone of South Texas, in Mexico, and throughout tropical and subtropical regions of the Western Hemisphere.

The Cattle Fever Tick Eradication Program (CFTEP) was established to eliminate bovine babesiosis from the U.S. cattle population. Babesiosis is a severe and often fatal disease of cattle. Cattle fever ticks (*Rhipicephalus annulatus*) and southern cattle ticks (*R. microplus*) are vectors of the causal agents of babesiosis. Babesiosis is generally characterized by extensive loss of red blood cells due to the breakdown of the cellular membrane. This leads to anemia, jaundice, and death. Infected cattle may exhibit neurological disturbances characterized by incoordination, seizures, muscle tremors, hyperexcitability, aggressiveness, blindness, head pressing, and coma. In addition, the two tick species are capable of causing blood loss, significant damage to hides, and an overall decrease in the condition of livestock. To stop the spread of cattle fever ticks, a cooperative State-Federal program was established in 1907. By 1943, the two species of cattle fever ticks, *R. annulatus* and *R. microplus*, were eradicated from the United States, with the exception of a permanent quarantine zone between Texas and Mexico. Today, this "buffer" zone extends more than 500 miles from Del Rio, Texas, to the Gulf of Mexico, and ranges from 200 yards to 6 miles wide. In addition, occasional temporary preventative quarantine areas or temporary "buffer" zones are placed in other locations when needed.

The CFTEP prevents the introduction of cattle fever ticks into the United States from Mexico by using horseback patrol surveillance along with systematic inspection and treatment of animals capable of hosting cattle fever ticks upon movement along the Rio Grande. Cattle Fever Tick Eradication Work Area Offices responsible for this work are located in Texas counties along the Mexico border. These locations are Brownsville (Cameron County), Del Rio (Val Verde

County), Eagle Pass (Maverick County), Laredo (Webb County), Mission (Hidalgo County), Rio Grande City (Starr County), and Zapata (Zapata County). The Main or "District" Office for the program is in Laredo, Texas.

B. Purpose and Need

Native and exotic ungulate species that serve as potential hosts for cattle fever ticks are abundant in South Texas (Pound *et al.*, 2010; Cardenas-Canales *et al.*, 2011; Moczygemba *et al.*, 2012). Nilgai antelope (*Boselaphus tragocamelus)* were introduced into Texas in the 1940s (Sheffield *et al.*, 1983) and are the most abundant free-ranging ungulate in the area (Bradley, 1997) with population estimates of more than 36,000 individuals (Traweek and Welch, 1992). Nilgai populations are highly mobile and can shift home ranges under pressure. They are a large species (males weigh in excess of 600 pounds) and can easily compete with cattle and native deer (Bradley, 1997; Moczygemba *et al.*, 2012). White-tailed deer prefer forbs and browse (leaves of woody plants) and consume little grass. If forbs and browse become scarce from competition or weather-related events, nilgai have the ability to shift their diet to grass whereas white-tailed deer are unable to do this and subsequently can suffer from malnutrition. The ability of nilgai to consume a variety of resources also can have an impact on the carrying capacity of a range (Armstrong and Harmel, 1981).

In February 2007, APHIS Mounted Patrol Inspectors (MPI) were presented with a harvested nilgai antelope that had trailed from privately-owned land to U.S. Fish and Wildlife Service (FWS) property at Boca Chica Beach, a tract of land near the Rio Grande in Cameron County, Texas. APHIS personnel inspected the animal and found it was infested with southern cattle ticks. This finding required APHIS to impose an "exposed" quarantine on the FWS property and an "infested" quarantine on the premises from where the animal had trailed.[1] In March 2009, after cattle fever tick infestations were found on nearly 25 percent of the nilgai antelope that were harvested from the FWS property of Boca Chica Beach, the quarantine status for the FWS property was changed to "infested". In April 2013, a nilgai that had been privately hunted was scratch-inspected and found to be infested with cattle fever ticks thus confirming the continual presence of infestation in the area.

The Boca Chica Beach Area consists of approximately 42,000 acres. Approximately 22,400 acres of this area is owned by FWS. In addition to the Boca Chica Beach Area "infested" quarantine status, there is currently one private premise that is quarantined as "infested" immediately adjacent to the Rio Grande, and one of three cattle herds in the area also is quarantined as "infested". The other two herds remain at risk of infestation (Figure 1).

[1] The four types of cattle fever tick quarantines that can be placed on premises are (1) infested, (2) exposed, (3) adjacent, and (4) control purpose or check premises.

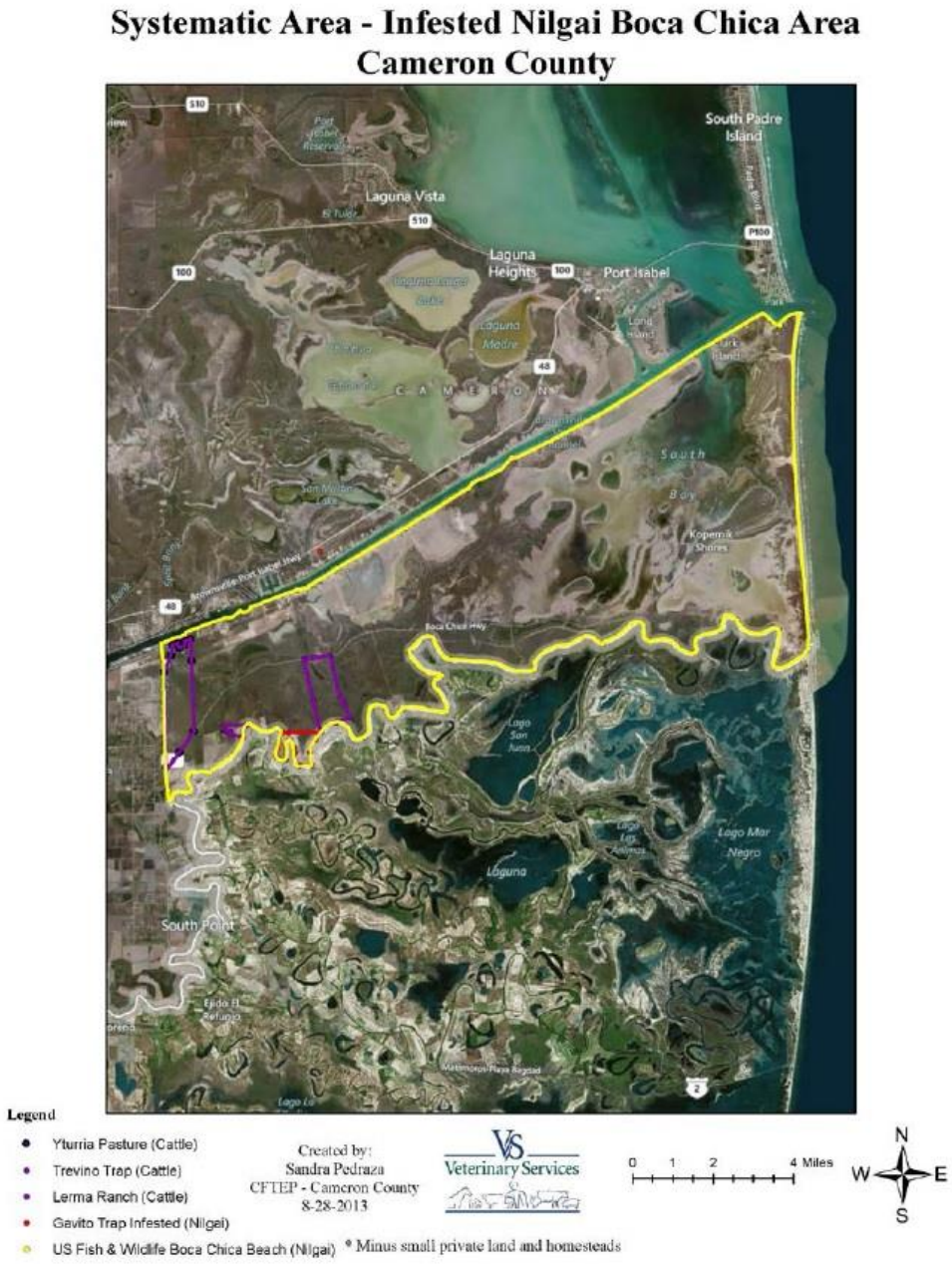

Figure 1. Boca Chica Beach Area with location of cattle herds in Cameron County, Texas.

It is Texas Animal Health Commission State law to treat all infested animals, including nilgai, present in areas quarantined as "infested". The increase in ticks in the Boca Chica Beach Area, combined with an increase in the size of the nilgai population (from approximately one dozen nilgai to more than 100 individuals), presents an increased opportunity for the ticks to spread in areas beyond the Boca Chica Beach Area. In May 2014, a cattle fever tick infested premises was discovered across the Brownsville Ship Channel north of the Boca Chica Beach Area. This land mass is owned and managed by the Port of Brownsville, Brownsville Navigational District (Figure 2). Much of this land is leased to private ranchers.

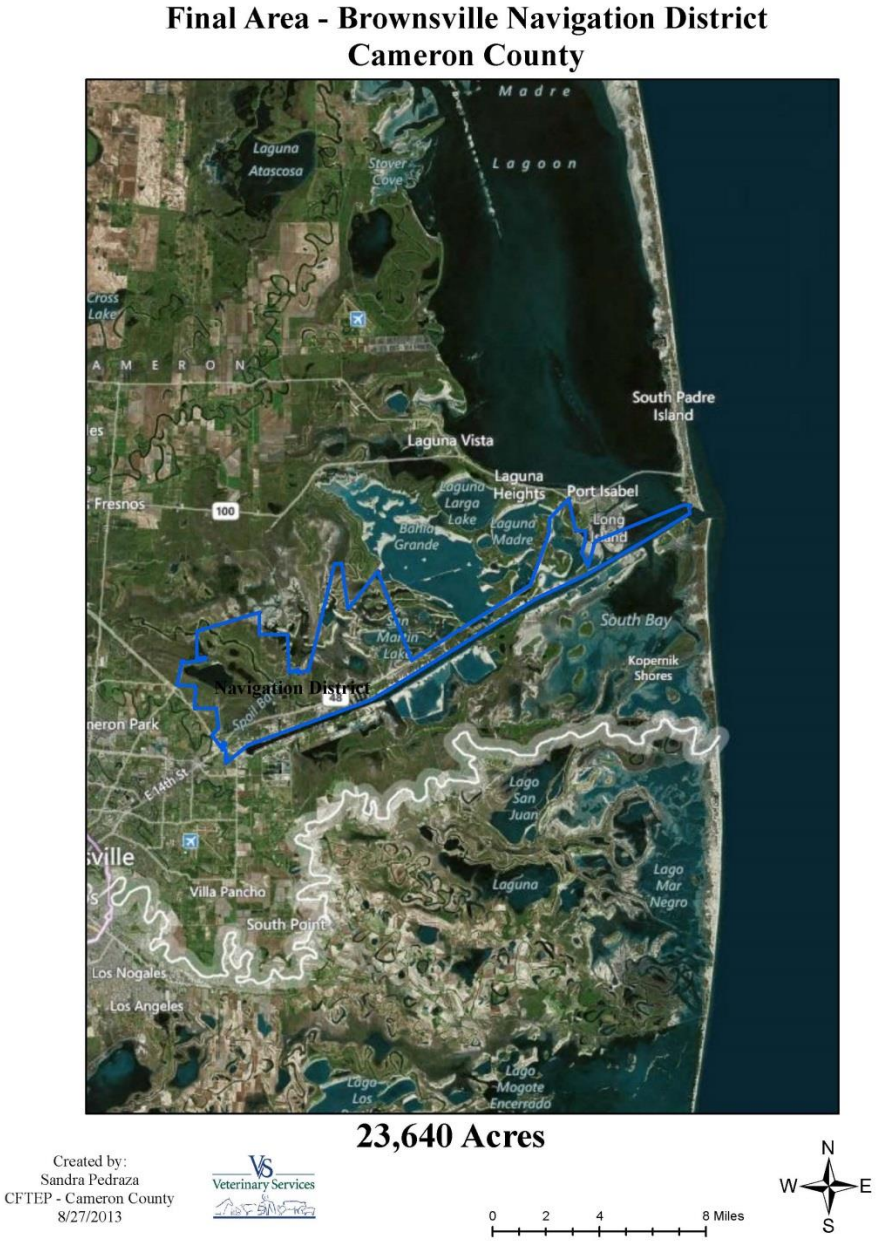

Figure 2. Brownsville Navigation District in Cameron County, Texas.

The Bahia Grande Area, also located north of the Ship Channel, is part of the Laguna Atascosa National Wildlife Refuge (Figure 3). This property is 21,700 acres and nearly half of the area consists of wetlands (FWS, 2013b). Bahia Grande is currently quarantined as "exposed".

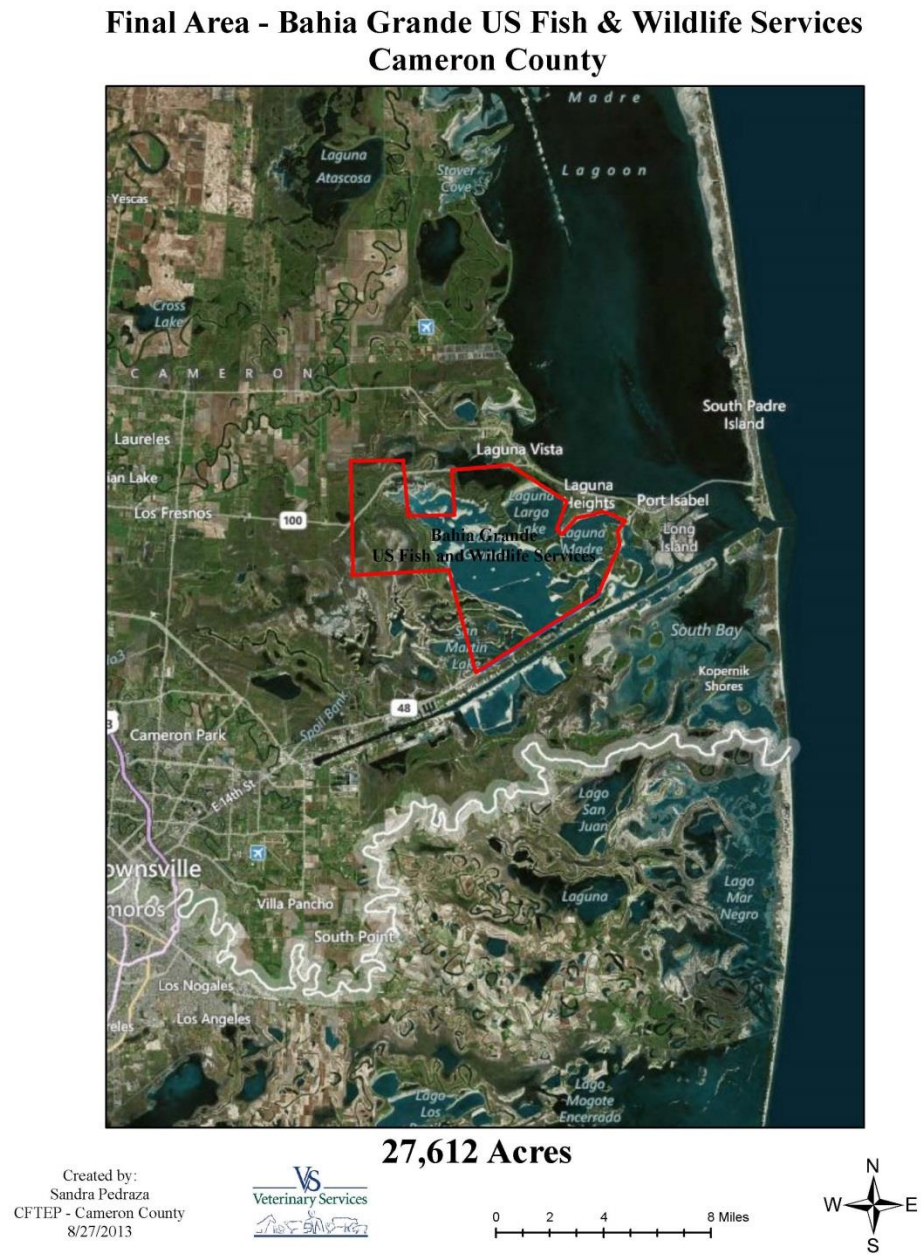

Figure 3. Bahia Grande Area in Cameron County, Texas.

During the last several years, there has been an increase in the number of tick infestations outside the existing quarantine zone due to several factors including increased abundance of wildlife along the Texas-Mexico border, increased commingling of livestock with the tick-bearing wildlife, and unrestrained movement of wildlife. To prevent movement of nilgai and the potential spread of cattle fever ticks beyond the Brownsville Navigation District, Boca Chica Beach Area, and Bahia Grande Area, APHIS proposes to conduct aerial harvesting in the Boca Chica Beach Area and aerial harvesting followed by surveillance and ground harvesting in the Brownsville Navigation District and Bahia Grande Area of Cameron County.

II. Alternatives

A. No Action

APHIS carries out activities to eradicate cattle fever ticks in South Texas, including activities that occur on and near the Boca Chica Beach Area, Brownsville Navigation District property, and the Bahia Grande Area. Portions of all three of these areas are currently under either "infested" or "exposed" quarantines. Cattle fever tick eradication efforts on or near these properties include horseback surveillance patrol along the South Texas border by APHIS MPI for stray or smuggled livestock from Mexico. Under the No Action Alternative, APHIS would not conduct additional efforts to prevent the spread of ticks on nilgai that inhabit these properties.

Without additional effort to prevent the further spread of ticks via nilgai that inhabit the Boca Chica Beach Area, Brownsville Navigation District property, and Bahia Grande Area, tick infestations would likely continue to spread up the coast and into areas with even greater numbers of high risk cattle populations. The No Action Alternative would allow cattle fever ticks to be available for movement on nilgai, which greatly increases the risk for expansion of cattle fever tick infestations to areas where cattle graze.

B. Aerial/ Ground Removal (Preferred Alternative)

APHIS proposes to conduct aerial harvesting of nilgai in the Boca Chica Beach Area of Cameron County. The Boca Chica Beach Area lies within the CFTEP permanent quarantine "buffer" zone and consists of approximately 42,000 acres. Approximately 22,400 acres of this area is FWS property and is quarantined as "infested" with cattle fever ticks. There are other privately-owned homesteads in the area. Two private premises that are currently quarantined as "infested" are Gavito Trap and Lerma Ranch.

The proposed aerial harvesting program would take an estimated 8-hour working day for one to two days, depending on the success of the nilgai removal. Then, after approximately one week to allow remaining nilgai to settle down, program personnel would repeat the activity for another one to two days. The goal is to reduce nilgai numbers low enough so that the program could be limited to once a year to maintain nilgai numbers at low levels.

To facilitate removal of nilgai from the Boca Chica Beach Area, the helicopter pilot would herd a small group of nilgai into a previously determined area, and then would drive one nilgai at a time to a road or other nearby location where a ground crew can easily recover the nilgai. The shooter in the helicopter would use a high-powered rifle to shoot each animal, making a clean head or body shot. When a nilgai is down, the ground crew would arrive, scratch inspect the

carcass on site, collect any ticks, and draw blood samples to evaluate for foreign animal diseases, such as babesiosis. Some heavy equipment would be used to retrieve nilgai carcasses near the road or location where each nilgai is shot. An Approved Establishment-Mobile Wildlife Harvest Processing Unit will conduct licensed pre-harvest meat inspection on site, field process the meat, and bury offal on site.

In addition, APHIS proposes to conduct aerial harvesting of nilgai in the Bahia Grande Area and Brownsville Navigation District property initially, followed by surveillance and ground harvesting after the quarantines are lifted. The Navigation District is an open area with little brush or vegetation. Bahia Grande consists of wetlands, brushlands, and grasslands. If ground harvesting is conducted, program personnel would use vehicles on existing roads in the area and ATVs in areas that cannot be accessed by regular vehicles. USDA APHIS Wildlife Services (WS) would assist with this portion of the proposed action. WS would first conduct surveillance to determine location and numbers of nilgai, and their movement patterns in the area. The proposed ground harvesting program would take place for 1-6 hours a day during dawn and dusk. The number of hours per day spent shooting would depend on the nilgai population, location, etc. It is expected that WS would remove 5-20 animals in a ground harvesting effort. The harvesting could continue on and off for a few weeks until WS removes the desired number of nilgai.

The harvesting program would be conducted by two or three teams of people with two or three people per team. Teams would set up a hunting blind and use a high-powered rifle (each team would have a shooter, spotter, and assistant). As with aerial harvesting, carcasses would be scratched for ticks. VS and WS would arrange for carcass removal and processing. Carcasses will not remain on site.

Due to the discovery of a cattle fever tick infested premises in the Brownsville Navigation District in May 2014, aerial harvesting will be the preferred method of harvest due to the numbers of animals to be taken. This action will take place to prevent the further spread of cattle fever ticks. In addition the same aerial harvest system as described above will take place in the Bahia Grande Area, which is currently quarantined as “exposed”.

C. Other Alternatives Considered But Dismissed from Further Consideration

APHIS dismissed capturing nilgai from the Boca Chica Beach Area, Brownsville Navigation District, and Bahia Grande Area and relocating them to a different area because nilgai are difficult to trap due to their speed, endurance, and large size. If trapping is successful, nilgai can suffer injury or death from ramming fences while trying to escape. APHIS would have to inspect all captured nilgai for cattle fever ticks and treat them before removal from the quarantined areas. Treatment of nilgia by spraying or dipping in coumaphos is an unfeasible

alternative. In addition, capture and relocation is expensive and is unlikely to result in the capture of the majority of nilgai in the Boca Chica Beach Area, the Brownsville Navigation District, and Bahia Grande. Therefore, this alternative was dismissed from further consideration.

III. Potential Environmental Consequences

The NEPA implementing regulations provide criteria that Federal agencies should evaluate, if applicable, in environmental documents for proposed actions. This section of the Environmental Assessment addresses the applicable criteria related to potential impacts from the No Action Alternative and from the Preferred Alternative. NEPA criteria that are applicable for consideration in this section of the document include animal impacts, human health and safety, and the physical environment.

A. No Action

Under the No Action Alternative, nilgai would continue to be hosts of cattle fever ticks and potential carriers of the ticks to other wildlife hosts, cattle, and equine. Under eradication requirements, however, all hosts for the parasite must be addressed. If no additional action is taken to control ticks on nilgai, then this would increase the tick load on pastures over time. Until recently, cattle herds across the ship channel were free of cattle fever ticks. The probability now exists that the ticks could spread further up the coast. A large population of nilgai exists in the coastal areas. If ticks were to spread further up the coast, then tick control would become difficult, if not impossible, due to the long-ranging habitat of the population of nilgai in the coastal area.

Humans are not hosts of cattle fever ticks (Barros and Fighera, 2008); however, humans can serve as hosts to a wide variety of other ticks that carry diseases. There has been an increase in the number of cases of human babesiosis over a 25-year period due to an increase in the white-tailed deer population. Human babesiosis due to cattle-associated *B. divergens* have begun to appear in the United States (Perez de Leon *et al.*, 2010). The No Action Alternative will impact humans across the United States by allowing unrestricted tick entry and dissemination to occur with concurrent increased risks to human health.

In addition, resident wildlife are at risk of a moderate to major long-term impact from an increase in the nilgai population in the Boca Chica Beach Area, Brownsville Navigation District, and Bahia Grande Area. Adverse impacts could occur to native vegetation as a result of over-browsing or trampling as the nilgai population continues to grow, and soil erosion could increase as a result of decreased plant cover and increased disturbance.

B. Proposed Action

1. Impact of proposed action on animals

The World Organization for Animal Health defines a disease vector as an insect or any living carrier that transports an infectious agent from an infected individual to a susceptible individual or its food or immediate surroundings (OIE, 2010). Cattle fever ticks can reduce livestock productivity and well-being as obligate blood-feeding parasites when present in relatively high numbers; they can indirectly harm hosts even when present in relatively low numbers by serving as vectors of the infectious agents that cause bovine babesiosis and anaplasmosis (*Anaplasma marginale*) (Aubry and Geale, 2011; Perez de Leon *et al.*, 2012). Babesiosis generally is characterized by extensive intravascular hemolysis (rupture of red blood cells) leading to depression, anemia, icterus (jaundice), hemoglobinuria (presence in the urine of hemoglobin from ruptured red blood cells), and neurological signs (Barros and Fighera, 2008).

In general, tick infestation in cattle without the protozoan-causing disease triggers anemia from blood loss. This anemia is accompanied by decreased appetite and weight loss. Each engorging tick can cause more than one gram in weight loss (the engorging durations varied between 28 and 810 days) (Jonsson, 2006). In cattle, tick feeding can reduce the weight of a 1,000-pound steer by 200 pounds in a year (APHIS, 2010) and eventually result in death (Jonsson, 2006; APHIS, 2010).

Cattle with the acute form of babesiosis develop high temperatures (106˚F or higher; the normal rectal temperature range for a cow is 98 to 102.8 °F) (Lew-Tabor, 2011). Usually, the cattle die three to four days after the high fever develops. Prior to death, cattle will stand abnormally with their heads lowered and backs arched. These cattle exhibit a loss of appetite combined with constipation followed by diarrhea, and they produce less milk. Hemoglobinuria, or "red water," is common (Barros and Fighera, 2008; CFSPH, 2008; APHIS, 2010).

Cattle affected with the chronic form of babesiosis develop a mild fever, generally stop eating and chewing their cud, develop anemia, and rapidly lose weight. This chronic form may last for many weeks, after which most animals gradually recover. Infected cattle are likely to suffer from relapses in the first several months after resolution of clinical signs. Infected cattle may also experience increased susceptibility to other diseases such as bovine tuberculosis (TB) and may display nervous behaviors called "tick poverty" (also known as "tick worry"). The growth of chronically infected immature cattle becomes stunted, and these animals are typically weak. Surviving cattle that are infected continue to suffer from anemia associated with the continual loss of blood due to babesiosis as well as ongoing tick feeding. In the summer, the disease incubation period (the time from when an animal is exposed until it first shows symptoms) can be as short as 10 to 15 days after the larvae (seed ticks) begin to feed on the animal. During the

winter months, the incubation period may take as long as 90 days (Ellenberger and Chapin, 1940; APHIS, 2010).

Cattle fever ticks also are capable of carrying and transmitting the infectious agent that causes bovine anaplasmosis (Aubry and Geale, 2011). This disease causes progressive anemia due to extravascular (outside of blood vessels) destruction of infected and uninfected red blood cells. In the late stages, acutely infected animals become weak and milk production declines. They experience a lack of appetite, loss of coordination, breathlessness when exerted, and a rapid pulse (Lew-Tabor, 2011).

As previously mentioned, nilgai are vehicles for tick propagation and relocation by serving as hosts for completion of the tick life cycle. By preventing the movement of ticks beyond the currently infested area, APHIS will greatly reduce the likelihood of tick introduction into northern Texas Concentrated Animal Feeding Operations (CAFOs). Impacts from uncontrolled tick populations in CAFOs could become severe because of the close proximity of the animals in these confined herds.

Cameron County is located in the South Texas Wildlife Management Area and the South Texas Brush Country ecoregion. This area is noted for its cattle industry and diverse wildlife. Grassland has been converted to shrublands in South Texas (Perez de Leon *et al.*, 2012) due in part to the increase in hunting in these areas (Perez de Leon *et al.*, 2010) as well as for the agriculture and energy industries. Bram *et al.* (2002) report that the progressive conversion of the grassland savanna of South Texas and adjacent areas of Mexico to shrublands provides a habitat more favorable to the survival of nonparasitic life stages of cattle fever ticks.

The South Texas Brush Country has one of the greatest concentrations of exotic animals in Texas. Free-ranging exotic species reported to have infestations of either *R. microplus* or *R. annulatus* include nilgai, aoudad sheep, wapiti (*Cerous Canadensis*), red deer, fallow deer, and axis deer (Sheffield *et al.*, 1983; Pound *et al.*, 2010). The identification of these exotic species as tick hosts presents a threat to the CFTEP by compromising the success of ongoing eradication efforts. Reducing the population of nilgai will limit the likelihood that nilgai will continue moving up the coast, subsequently spreading cattle fever ticks northward.

Under the Proposed Action Alternative, ticks are less likely to become established in the wildlife population in Texas and subsequently disseminated throughout the country. If controlled by an integrated management strategy that includes the use of invasive species removal, ticks and tick-borne diseases located in Mexico would be less likely to negatively impact U.S. agriculture.

2. Human Health and Safety

a. General Public

Humans are not hosts of these species of ticks (Barros and Fighera, 2008); however, humans can serve as hosts to a wide variety of other ticks that carry diseases. If nilgai are lethally removed from within the Boca Chica Beach Area, Brownsville Navigation District, and Bahia Grande Area, there will be a reduced opportunity for the spread of ticks and disease transmission. While there will be some noise associated with aerial harvesting (helicopters, heavy equipment, and firearms) and ground harvesting (heavy equipment and firearms), the noise is expected to be limited in time. Any dust that is stirred up as a result of the proposed action will be minimal, short-term, and in limited locations with limited negative effects to air, drinking water, and consumable vegetation (e.g., crops) nearby. In addition, hunters north of these areas are less likely to be exposed to cattle fever ticks, and the wildlife they harvest is likely to be tick-free.

APHIS would work under an Incident Command Structure to ensure the safety of the public during nilgai removal operations. The Operation Incident Commander would contact the Refuge Dispatch at the beginning and the end of the operations. Refuge Law Enforcement Officers would be available to assist the public and answer questions, should the need arise. Any concerns regarding the safety of the public with respect to the removal of nilgai will be mitigated by the Incident Command Structure and associated safety plan.

b. Worker Safety

There is a minor safety concern arising from hazards to employees during lethal removal activities, but this is not an ongoing or continuous physical hazard after the removal is complete. Any concerns regarding the safety of workers with respect to equipment, dust, and noise will be mitigated through the use of personal protective equipment in accordance with applicable safety and health regulations (29 CFR §§ 1910 et seq.). In addition, APHIS developed a Safety Operational Plan that addresses the most common safety scenarios.

3. Physical Environment

As previously mentioned, the proposed action would take place in Cameron County, Texas. Approximately 22,400 acres of the 42,000 acres in the Boca Chica Beach Area is owned by FWS. There are small private properties in this area as well. The Brownsville Navigational District is owned and managed by the Port of Brownsville. A significant portion of this land is leased to private ranchers. The Bahia Grande Area also is owned and managed by FWS. The potential environmental impacts of the proposed action would be primarily due to impacts to soil, vegetation, and water quality from trampling. These aspects are discussed below.

a. Soil and Vegetation

Cameron County is located within a distinct ecoregion known as the South Texas Brush Country. It is an arid to semi-arid region with drought-tolerant vegetation. Native species are reliant on soil moisture made available by seasonal rains, occurring primarily during the early summer and fall months (Jahrsdoerfer and Leslie, 1988; Taylor *et al.*, 1997).

Human activity has had a tremendous impact on the landscape (McMahan *et al.*, 1984), via brush control and grazing practices associated with cattle ranching. This region has experienced a 23 percent increase in woody cover since 1941 (Council, 1994). Previously restricted to thickets, upland areas, major drainages, and river bottoms, shrub species are now prevalent across the landscape. In addition to human activity, periodic droughts have aided the gradual migration of brush species into open grassland. These periodic droughts are predicted to increase in frequency and duration as the effects of climate change become more prevalent (Karl and Knight, 1998).

During aerial harvesting operations, APHIS will push nilgai to roadsides before harvesting them to reduce disturbance of vegetation. APHIS employees would primarily use existing vehicle access roads or paths while being careful to avoid soil or vegetation disturbance to the degree possible. A reduction in the size of the nilgai population could result in a decrease in impacts to soil and vegetation on a long term basis since nilgai are known to cause erosion and destruction of native plant species (FWS, 2011).

The proposed action would not alter historic land use of the area; therefore, overall impacts to soil and vegetation would not increase and may potentially decrease. Immediate environmental impacts would be minor, localized, and temporary.

b. Water

Potential environmental impacts to water quality could result from erosion and sedimentation from compaction of vegetation or rutting from vehicles, ATVs, and heavy equipment used during the nilgai removal process. Minor temporary soil disturbance also could occur from increased foot traffic on trails that ground hunters use to track nilgai. Any adverse impacts would be localized and would generally regrow during the next growing season. The FWS has analyzed impacts of hunting on water quality at their refuges, and in all cases determined that the impact to water quality was negligible (FWS, 2011). No long-term water quality impacts are expected as a result of the proposed project. In addition, FWS identified beneficial impacts of invasive species removal, including nilgai, to include reduced soil erosion from heavily used game trails and improved vegetative cover, which subsequently improves water quality.

IV. Other Environmental Issues

A. Environmental Justice and the Preferred Alternative

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires each Federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions.

People that may visit the refuge properties or who are located near the Boca Chica Beach Area, Brownsville Navigation District, or Bahia Grande Area could observe the aerial harvesting; however, safety protocols will minimize the risk of this operation to the public. A formal risk assessment conducted by APHIS found that risks to human safety from shooting were low (USDA, 1997). APHIS has determined that minority populations or low-income populations would not be subjected to disproportionately high or adverse human health or environmental effects from the activities associated with the Preferred Alternative for removal of nilgai on the Boca Chica Beach Area, Brownsville Navigation District property, or Bahia Grande Area.

B. Protection of Children and the Preferred Alternative

Executive Order 13045, "Protection of Children from Environmental Health Risks and Safety Risks," requires each Federal agency to address disproportionate environmental health risks or safety risks to children that arise in the course of agency policies, programs, activities, and standards. Implementation of the Preferred Alternative does not pose greater risks to children than to other parts of the affected populations.

C. Tribal Consultation

Executive Order 13175, "Consultation and Coordination with Indian Tribal Governments," was issued to ensure that there would be "meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications….". There are no federally recognized tribal lands or protected Native American gravesites identified within the program area, and there are no expected impacts to tribal property from implementation of the Preferred Alternative. APHIS program officials will initiate consultation with governing tribal authorities if the proposed action needs change and have the potential to affect tribal property.

D. Threatened and Endangered Species and the Preferred Alternative

Section 7 of the Endangered Species Act and its implementing regulations require Federal agencies to ensure that their actions are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of critical habitat. APHIS considered the potential effects of the Preferred Alternative on threatened and endangered species and designated critical habitat. There are 12 listed species that are potentially impacted (Table 1); however, APHIS determined that the Preferred Alternative will have no effect on the West Indian manatee, green sea turtle, Kemp's Ridley sea turtle, leatherback sea turtle, loggerhead sea turtle, hawksbill sea turtle, Texas ayenia, and South Texas ambrosia.

Table 1. Threatened and Endangered Species in the Vicinity of Boca Chica Beach Area, Brownsville Navigational District, and Bahia Grande Area, Texas.

Common Name	Scientific Name	Critical Habitat	Listing Status
West Indian Manatee	*Trichechus manatus*	No	Endangered
Green Sea Turtle	*Chelonia mydas*	Yes	Endangered
Kemp's Ridley Sea Turtle	*Lepidochelys oliveacea*	No	Threatened/Endangered[1]
Leatherback Sea Turtle	*Dermochelys coriacea*	No	Endangered
Loggerhead Sea Turtle	*Caretta caretta*	No	Threatened
Hawksbill Sea Turtle	*Eretmochelys imbricata*	Yes	Endangered
Texas ayenia	*Ayenia limitaris*	No	Endangered
South Texas ambrosia	*Ambrosia cheiranthifolia*	No	Endangered
Gulf Coast Jaguarundi	*Herpailurus* (=*Felis*) *yagouaroundi cacomitli*	No	Endangered
Ocelot	*Leopardus* (=*Felis*) *pardalis*	No	Endangered
Piping Plover	*Charadrius melodus*	Yes	Threatened/Endangered[2]
Northern Aplomado Falcon	*Falco femoralis septentrionalis*	No	Endangered

[1]Kemp's ridley sea turtle is listed as endangered in the breeding colony populations on Pacific coast of Mexico and threatened wherever found other than where listed as endangered.

[2]The breeding population in the Great Lakes watershed is listed as endangered and the populations breeding along the Atlantic Coast and in the northern Great Plains are listed as threatened.

APHIS determined that the proposed action may affect, but is not likely to adversely affect the Gulf Coast jaguarundi, ocelot, piping plover and its designated critical habitat, and northern aplomado falcon. APHIS requested concurrence from FWS for the Boca Chica Beach Area and

Brownsville Navigational District, and in a letter dated February 20, 2014, FWS concurred with this determination contingent upon limiting operations to outside of the aplomodo falcon nesting season. APHIS has updated its Biological Assessment to include the Bahia Grande Area and is awaiting concurrence from FWS.

E. Historic and Cultural Resources

APHIS has considered potential impacts under Section 106 of the National Historic Preservation Act. Section 106 requires Federal agencies to consider the impacts of their actions on historic properties. Historic sites on or near the Boca Chica Beach Area, Brownsville Navigation District property, and Bahia Grande Area include Palmito Ranch Battlefield, Palo Alto Battlefield, Old Brulay Plantation, Palmito Hill Cemetery, and Los Sauces Cemetery. The activities associated with aerial and ground removal of nilgai would be conducted away from historic and cultural resources and therefore would not result in disturbances to these sites or resources that would change the historic nature of sites. The proposed action does not have the potential to cause long-term visual, atmospheric, or audible elements that would result in effects on the character or use of historic properties. Instead, the proposed action may provide beneficial impacts to these areas due to protection from damage that can occur from nilgai. APHIS requested and is awaiting concurrence from the Texas Historical Commission that no historic or cultural resources would be affected by the proposed action.

F. Migratory Bird Treaty Act

Federal law prohibits an individual to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry, or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird or any part, nest, or egg of any such bird (16 U.S.C. §§ 703-712; 50 CFR § 21).

Texas occurs within the Central Flyway, a bird migration route that is composed of the States of Montana, Wyoming, Colorado, New Mexico, Texas, Oklahoma, Kansas, Nebraska, South Dakota, and North Dakota, and the Canadian provinces of Alberta, Saskatchewan, and the Northwest Territories. Many of the migratory bird species of the Central Flyway winter in Central and South America. Some migrate across the Western Hemisphere to the Arctic Circle, and others migrate to South America (National Audubon Society, 2013). Birds in this flyway include the American oystercatcher, black skimmer, brown pelican, greater sage-grouse, least tern, lesser prairie chicken, piping plover, reddish egret, redhead, red knot, ruddy turnstone, sanderling, sandhill crane, whooping crane, and Wilson's plover (National Audubon Society, 2013). Birds that migrate along this route depend on stopover habitat, such as native prairie and

wetland areas, along the flyway, and nearly half of the bird species in the continental United States visit the Laguna Atascosa National Wildlife Refuge (FWS, 2013a).

Removal of nilgai during the nesting season of migratory birds could result in incidental take of active bird nests, eggs, or hatchlings by disturbance from noise or from trampling. To prevent negative effects associated with removal of nilgai, APHIS would conduct removal activities outside of the nesting season (general nesting season is March through August).

G. Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 U.S.C. § 668) prohibits the take of bald or golden eagles unless permitted by FWS. The term "take" is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb" (50 CFR § 22.3). Disturb means to agitate or bother to a degree that causes . . . injury . . . a decrease in its productivity . . . or nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior (§ 22.3).

Bald eagle breeding populations occur primarily in the eastern half of Texas and along coastal counties from Rockport to Houston (TPWD, N.D.). Nonbreeding or wintering populations are located primarily in the Panhandle, Central, and East Texas, although they may be present in areas of suitable habitat throughout the State (TPWD, N.D.). Golden eagles are rare to locally uncommon in their range in West Texas (Lockwood and Freeman, 2004). Golden eagle nests are usually placed at higher elevations in remote areas on cliffs, in trees, or structures (Tweit, 2007). Therefore, neither bald nor golden eagle nests are likely to be present near the Boca Chica Beach Area, Brownsville Navigation District, or Bahia Grande Area.

H. Potential Cumulative Impacts

The potential impacts from aerial and ground removal of nilgai in combination with similar actions are referred to as cumulative impacts. Activities that occur on the Boca Chica Beach Area, Brownsville Navigation District property, and Bahia Grande Area that have some impact on the natural environment, in addition to the visiting public, include the CFTEP patrols and FWS and U.S. Department of Homeland Security, Customs and Border Patrol uses of the existing trail along the Rio Grande.

In March 2009, APHIS, with FWS agreement and the cooperation and use of expert helicopter assistance and ground crews, conducted capture-and-removal activities of nilgai antelope in the Boca Chica Beach Area. The activities in March 2009 resulted in the removal of 17 nilgai and occurred during a 2-day timeframe. Limited hunting of nilgai in Texas and their high rate of movement make the control of their numbers a major management concern (Sheffield, 2010).

A future APHIS-proposed action to reduce the spread of ticks from tick-host ungulate wildlife and stray livestock from Mexico is the installation of tick barrier game fencing to close existing gaps by adding new fencing in areas where cattle fever tick infestations have increased in recent years. This proposal would primarily impact rural/agricultural privately-owned land in Maverick, Zapata, Starr, and Webb Counties. The cumulative impacts from the proposed action when assessed in relation to current baseline and past, present, and future activities constitutes a small incremental change to the human environment. Some of these cumulative changes may be positive such as the reduction in cattle fever ticks and the associated economic benefits from having tick-free cattle. To preserve environmental quality for the human population and ecological resources, potentially negative cumulative impacts would be minimized throughout the proposed action by following best management practices.

There would be short term, minor intensity impacts to resident wildlife from increased human presence during the removal activities, in addition to noise from ATVs, vehicles, helicopters, and gunshots. Resident wildlife would benefit in the long-term by removal of an invasive species that is a source of competition for native wildlife. The additional APHIS activities involved with nilgai removal would likely result in minimal impact to past and ongoing activities on the Boca Chica Beach Area, Brownsville Navigation District property, and Bahia Grande Area and would not result in long-term or adverse cumulative impacts to the quality of the environment.

V. Listing of Agencies Consulted

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Policy and Program Development
Environmental and Risk Analysis Services
4700 River Road, Unit 149
Riverdale, MD 20737–1237

U.S. Department of Agriculture
Animal and Plant Health Inspection Service
Veterinary Services
Cattle Fever Tick Eradication Program
4700 River Road, Unit 38
Riverdale, MD 20737–1231

U.S Department of the Interior
Fish and Wildlife Service
Coastal Ecological Services Field Office
3325 Green Jay Road
Alamo, Texas 78516

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