Matlacha Pass National Wildlife Refuge Feral Cat Management

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Executive Summary

This management plan focuses on the protection of shorebirds, native ground nesting birds, and terrestrial vertebrates through the removal of feral cats from Matlacha Pass National Wildlife Refuge and Matlacha Pass Aquatic Preserve in Lee County, Florida. Feral cats directly affect many ground nesting and terrestrial vertebrate species through predation, and have caused the decline of many endemic or rare species. Justification for the eradication of feral cats from MPNWR and MPAP comes from several legal sources and scientific literature indicating predation upon native wildlife. The goal of this management plan is to reduce the effect of feral cats on shorebirds and ground nesting birds in Lee County, Florida.

Action will be taken by passing new and improved regulations for cat owners, such as mandatory microchipping and cat-proof fencing. The feral cat population will be reduced through direct and indirect means. Some of these measures include live-trapping, introduction of feline distemper, toxic baits, and sharpshooters. The removal of non-native predators for the protection of native wildlife is a practice commonly used throughout the country. It is often necessary to remove invasive species in order to protect native wildlife in a habitat significantly altered by humans.

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Natural History

Felis catus, the domestic cat, originated from a wild species; however it is considered a separate species (Hatley 2003). The domestic cat originated from the African wild cat about 4000 years ago, and has since spread in popularity since it was first domesticated in Egypt (Hatley 2003). Due to their popularity, the domestic cat has spread across North America; currently there are approximately 73 million domestic cats owned in the United States (HSUS 2002). The spread of domestic cats across the United States has gone unrecognized as a spread of an invasive species, one which has the potential to affect many native bird and vertebrate species (Danner et al. 2010). Free-ranging cats, those that are outside and not contained, are known to predate on native species on levels similar to feral cats (feral cats) (Danner et al. 2010, Hatley 2003, Dauphine and cooper 2009). There have been 33 native bird extinctions directly attributed to either feral or free-ranging cats, which makes them one of the leading causes of bird extinctions worldwide (Danner et al. 2010). According to the IUCN, feral cats are "one of the 100 worst invasive alien species" (Lowe et al. 2000).

Survival

Because feral cats have been largely overlooked as a species, there is not a wide range of data on their immigration, emigration, survival, reproduction, and movement (Danner et al. 2010). The general life history characteristics of feral cats are thought to be the same as traditional domestic cats, only differing in their lifetime expectancy (Danner et al. 2010, Hatley 2003). Danner et al. (2010) aged feral cats in Hawai'i via tooth cementum analysis. Survival rates for 2-4 year old cats were 20.4%, with age 5-7 years showing a sharp decrease (6% survival). Similarly, Kaeuffer et al. 2004 showed less than 3% of the population living past year 4, and only 1% living to year 7. Although the mortality rate for feral cats decreases dramatically once past 5 years, individuals over 10 years are still as reproductively viable and as an efficient predator as younger individuals (Danner et al. 2010, Devillard et al. 2003).

The longevity of feral cats can vary depending upon whether they are closely associated with humans, or are in a wild setting (Danner et al. 2010). Populations of feral cats that have a high rate of feline distemper (feline leukemia) often have a low average longevity (Danner et al. 2007). Deaths of feral cats living in areas with high human densities are often attributed to anthropogenic causes, such as vehicles or eradication campaigns (Danner et al. 2010).

Reproduction

Feral cats have the ability to reproduce quickly and create large populations in a short time period. Hemmer (1976) found that feral cats can produce 2-3 litters per year with an average of 5-6 kittens per litter. Theoretically, a single female and her offspring could produce over 420,000 offspring throughout 7 years (FWC unpublished). Because of their high reproductive rate, it is easy to see how a population can explode when isolated with a food source.

Diet

A mesopredator, the domestic cat preys mainly on small mammals, birds, and reptiles (FWC unpublished). Cole and Temple (1996) showed that the diet of feral cats in Wisconsin consisted of 70% mammals, 20% birds, and 10% reptiles/amphibians. This study also had an estimated 7.8 – 38.7 million birds killed annually by feral and free-ranging cats. Similarly, Churcher and Lawton (1987) projected that the annual diet of feral cats consisted of 64% small mammals and 36% songbirds. These studies have also suggested that bird species are especially at risk during fledging periods.

Multiple studies have illustrated the phenomenon of feral or free-ranging cats predating regardless of the availability of food resources (FWC unpublished, Jones and Coman 1981). Cats have been shown in multiple laboratory studies to hunt even when fed daily (Warner 1995, Churcher and Lawton 1987).

Although the consumption of prey may decrease when fed, the cats still hunt and kill native species regardless of feeding (Liberg 1984).

Predation

Predation of native wildlife species by feral cats can occur in any habitat; however it is especially severe on islands and small parcels of wildlife habitat (Jurek 1994). The predation rates of feral and free-ranging cats can vary widely, but in most cases it will have a significant effect on native species (Jurek 1994).

Predation by feral cats can vary from 15 birds and 24 mammals per year (Crooks and Soule 1999), to 111 animals per year (Mitchell and Beck 1992). On islands, feral cats have been estimated to kill up to 3 million seabirds per year (Chapuis et al. 1994). An estimated 18% of the annual production of voles and 24% annual production of wood mice were predated by feral cats in rural Sweden (Liberg 1984). In Florida, there are an estimated 271 million small mammals and 68 million birds predated by cats annually (Hatley 2003).

The predation rates by feral cats are often enough to cause a species extinction by themselves (Chapuis et al. 1994). If left unchecked, populations of feral cats can grow exponentially until their food source has been depleted (Jurek 1994). Marion Island is an example of what can happen if a population of cats is allowed to grow. With an estimated population of over 100,000 feral cats at one time, and over 3 million birds killed annually through predation, the effect on native shorebirds was extensive (Chapuis et al. 1994). Predation having this effect on a species has been shown in Florida, where feral cats have severely declined a population of endangered beach mice (FWC unpublished).

Management Issues

Ecological

There is an estimated 5.3 million domestic cats preying upon native wildlife in Florida (Dauphine 2009). Endemic and rare forms of wildlife suffer great losses when co-occurring with feral cats (Workiu 2012). Feral cats have been shown to impact 175 threatened taxa when inhabiting islands, including leading to the extinction of 78 bird, mammal, and reptile species (Workiu 2012).

Feral cats serve as vectors for diseases, including rabies, cat scratch fever, hookworms, roundworms, toxoplasmosis, feline distemper, and feline leukemia (CDC 2000). Cats are a common carrier of rabies, and have twice the number of reported cases as cattle or dogs (CDC 2000). There is a threat of the transmission of disease to humans (rabies) or endangered native wildlife, such as the cougar and Florida panther (feline distemper, feline leukemia) (FWC unpublished).

In Florida, feral cats are known to prey upon native and threatened species, such as the white-crowned pigeon, piping plover, black-bellied plover, Wilson's plover, killdeer, American oystercatcher, spotted sandpiper, American avocet, Wilson's snipe, red knot, Florida brown snake, peninsula ribbon snake, rim rock crowned snake, red rat snake, and beach mice (Bowman 2003, Holler 1992, Humphrey and Barbour 1981, Workiu 2012). The extinction of pallid beach mice was synchronized with a local increase in the feral cat population (Humphrey and Barbour 1981). Feral cats have also been shown to prey upon green and loggerhead sea turtle nests in Monroe, Charlotte, Sarasota, Palm Beach, and Okaloosa counties (FWC unpublished).

Ground nesting birds suffer the worst predation by feral cats. Predation on shorebirds, terns, and gulls has been documented in Florida (Gore and Kinnison 1911, Below 1996, Gore 1996). Other ground nesting birds have been preyed upon, including northern bobwhite quail, goatsuckers, brown thrashers, eastern towhees, and wood warblers (Florida FWC). Several documented cases of feral cats preying upon the threatened Florida scrub jay exist (Bowman 2003).

Legal Authority

The Endangered Species Act mandates that federal agencies conserve threatened and endangered species (US Fish and Wildlife 2012). Section 10 requires private landowners, corporations, and state/local governments to take into account activities on their respective lands that may take threatened or endangered species. Take can include harboring or promoting the growth of feral cat colonies that prey upon wildlife (US Fish and Wildlife 2012).

The Migratory Bird Treaty Act recognizes international resources with federal trust protections. This treaty protects over 1,000 bird species in the U.S., prohibiting the take of these species (US Fish and Wildlife 2012). Citizens that practice activities which unintentionally take species of migratory birds may be prosecuted under this act (US Fish and Wildlife 2012).

The National Wildlife Refuge System Improvement Act of 1997 is to control a network of land for the conservation and management of fish and wildlife. The primary goal of the NWRSIA is the conservation of wildlife (US Fish and Wildlife 2012). This treaty allows the removal of pest species on refuge lands to prevent damage to native wildlife populations (US Fish and Wildlife 2012).

Economic Factors

A reduction in the feral cat population can lead to a decrease in the spread and transmission of diseases to humans and pets (Dubey 2002). Specifically, a reduction in the spread of rabies, feline panleukopenia, and feline leukemia could be expected (Dubey 2002). These can be transmitted to the Florida panther, mountain lion, and also domestic cats (Hatley 2003). Currently, the Florida Panther Research and Management Trust Fund operates on a $1,213,845 annual budget (FWC unpublished). Most of this fund is spent on the management of the Florida panther, including providing care for injured Florida panthers (FWC unpublished). Feral cats can also transmit disease to other wildlife, such as raccoons, foxes, and skunks (Hatley 2003).

Statement of Need

There is currently a population of over 200,000 feral cats in Lee County, Florida (Hatley 2004). Matlacha Pass National Wildlife Refuge (MPNWR) in Lee County, Florida, is home to many species of threatened mammals and ground nesting birds. Feral cats have an exaggerated impact on native wildlife when existing on an island habitat. Without any human action, a colony of feral cats on an island can devastate the native wildlife populations. Consisting of a small isolated island, MPNWR is an important nesting ground for many species of shorebirds. If the population of feral cats on MPNWR is left unchecked, it could easily decimate the native shorebird populations, as seen similarly on Marion Island (Nogales et al. 2004).

Matlacha Pass Aquatic Preserve (MPAP) is also home to many shorebirds and native wildlife populations. Little Pine Island, the eastern portion of MPAP, is also home to a small population of feral cats. This population could also expand, taking a large toll on the nesting shorebirds and small mammals (Nogales et al. 2004). With a high reproductive rate, feral cats could decimate the wildlife on this island

(Hemmer 1976). When left untouched on small islands, feral cats have ruined habitat and displaced entire populations of shorebirds (Nogales et al. 2004).

There exists a need to remove the populations of feral cats from MPNWR and MPAP in order to prevent the decimation of native wildlife populations (Nogales et al. 2004). With both of these being islands, they are a good candidate for feral cat eradication because of the minimal chance of re-colonization.

Goal: Reduce the impact of feral cats on nesting shorebirds and terrestrial vertebrates in Lee County, Florida.

Objective 1: Reduce the feral cat population in Lee County, Florida, by 160,000 individuals (80%) within two years, and eradicate the feral cat population in Matlacha Pass National Wildlife Refuge and Matlacha Pass Aquatic Preserve east of Pine Island Creek (Little Pine Island), within two years.

Action: Live trapping

Feral cats will be removed through the use of live trapping. Live trapping will consists of cage traps set throughout the study area. Traps will be set to reduce the impact of exposure (sun, heat, rain). Traps will be set with the most appealing visual attractants and baits. These will include processed fish, retail cat food, and feathers (Castillo and Clarke 2003). Non-target species, such as raccoons and opossums, will be released immediately.

Cats trapped on management lands will be transferred to a processing facility. At the facility cats will be checked for any identifying marks or tags, including microchips and tattoos. Marked cats will be transferred to the local animal shelter to be reunited with their owners. Cats not

marked in any way or otherwise known to be free-roaming will be euthanized at the processing facility.

The use of live trapping is widely accepted across the nation in trap-neuter-release program (Loyd 2010). These programs are often implemented to control feral cat populations, however many are unsuccessful (Loyd 2010). Euthanizing old, injured, or even overpopulated animals at shelters is a common practice. With both of these practices accepted, there should be minimal negative public comment on this control method. Any negative comment will be responded to with the justification for managing feral cats.

Action: Introduction of feline distemper

The introduction of feline distemper has been used to manage feral cats on islands throughout several different management programs (Nogales et al 2003). On Marion Island, feline distemper was introduced to successfully cull the feral cat population (Nogales et al 2003). The introduction of a disease specific to cats would be an effective passive management technique to help control the population.

Feline distemper will be introduced to feral cat colonies in specific locations, areas with the least human contact. This method of eradication will be conducted with live trapping. A portion (10%) of the live-trapped feral cats will be infected with a live strain of feline distemper (Loyd and DeVore 2004). Infected feral cats will be marked with an ear tag. After processing, the infected cats will be released.

A negative outcry from some stakeholders is to be expected when employing a radical method of wildlife control. Although this is expected, some stakeholders will be pleased with the

effective means of control. Fewer feral cats will mean an increase in the shore bird populations, which will have a positive effect on the birding community. Also, many concerned with the impact feral cats have on wildlife will support a cost effective means of control that can work without human involvement.

Because of the chances of spreading feline distemper to pets (cats and ferrets), this practice will only be implemented in MPNWR (island), and on Little Pine Island. These places are not commonly in contact with civilians and will prevent spread of feline distemper to pets.

Action: Toxic baits

Toxic baits are often used by civilians and management agencies to control pests (Eason et al 1992). The use of toxic baits has been used in several management practices to control feral cats and feral pigs (Eason et al 1992).

The use of toxic baits will be employed at existing feral cat feeding stations, which are currently in use by the public. Through new regulations to be passed, these feeding stations will be made illegal. Toxic bait placed in these feeding stations will be made cat specific, by placing it at the end of several obstacles that will involve climbing and jumping (Aarde 1984). These obstacles will be designed to eliminate the possibility of non-target species feeding on the toxic bait. Polymer bait coated in sodium monofluoroacetate (1080) will be used. This bait has been show successful in the eradication of feral cat colonies (Easton et al 1992).

Many stakeholders will likely be opposed to the replacement of existing feeding stations with toxic bait. However, by baiting current feral cat feeding stations with 1080, there will be a swift

and significant culling of many feral cats. Although this method is likely to be unsupported by any stakeholder, it is a very cost effective and efficient means of reducing the feral cat population. This method is justified not only by the impact of feral cats on native wildlife, but also because it can be one of the most efficient and cost effective means of controlling feral cats. Some stakeholders will see the value in this means of control.

Action: Sharpshooters

The use of sharpshooters in managing feral pig and deer populations is well documented across the nation (Peck and Stahl 1997). Sharpshooters are an effective means of controlling a population with almost no harm to non-target species (Peck and Stahl 1997). Culling with sharpshooters can be utilized to remove select individuals, a certain age class, or an entire population. However, the cost associated is often high, due to the extensive man hours required.

Sharpshooters will be employed on Little Pine Island and Matlacha Pass National Wildlife Refuge after live trapping and introduction of feline distemper have both been utilized. By utilizing sharpshooters, it is possible to eliminate a few remaining individuals who are either immune to feline distemper or are trap shy.

It can be expected that some stakeholders will not support the decision while others will feel as though it is necessary. It is an important aspect of the management plan because it does not allow any remaining individuals to re-colonize the islands. Without eliminating the few remaining individuals, it can be expected that the islands will be re-colonized within a few years.

Action: Cat ownership regulations

There are many strict regulations in place for dog owners; however the regulations for cat owners are outdated. Dogs are not allowed to run freely and kill wildlife. Any dog that is feral and harms wildlife is quickly dispatched or removed (Hillsborough County VMS, 2013). With such regulations imposed on canines, it is understandable to impose regulations onto other pets that harm a substantial amount of wildlife (Dauphine and Cooper 2009).

Regulations will be implemented to slow the immigration of feral cats from free ranging house cats. These regulations will hold the owners responsible for the control of their cats and also to prevent domestic cats from harming wildlife. These regulations are to include mandatory micro chipping, indoor/enclosed feeding, and mandatory cat-proof fencing for outdoor cats. Similar regulations have been implemented in different parts of the state to protect native species (Hillsborough County VMS, 2013).

The introduction of new regulations is easily justified and will not be opposed by as many stakeholders as the other actions. With the information of how harmful domestic free-ranging cats are on wildlife populations, it is understandable to limit free-ranging cats.

Action: Free-ranging cat survey

A survey will be distributed to gain a further understanding of the amount of domestic free ranging cats in Lee County (appendix 1). The survey will be randomly distributed to residents of Lee County, and also available to anyone interested in feral cat management. This survey is designed to help with an estimate of the amount of households in Lee County that have free ranging cats, and the extent of those free ranging cats. Surveys are a useful tool in gaining an

understanding of public opinion (Lawton and Thompson 2013). This survey will help with the decision of furthering feral cat management once the two objectives are complete.

Action: Birding survey

A survey will be distributed to gain an understanding of how many locals are avid birders, and how many residents of Lee County enjoy seeing birds (appendix 2). It is important to understand how stakeholders view the wildlife to be protected, and this survey will help gain a better understanding of that. Surveys are commonly distributed to birders, often for the use of gaining insight into bird populations (Perkins and Vickery 2007). This survey will gain an understanding of whether or not the birding community supports this management plan.

Action: Feral cat information pamphlet

An informative pamphlet will be distributed throughout Lee County highlighting the new changes to take effect, and also to inform the residents of the negative effect feral cats have on wildlife (Appendix 3). This pamphlet will be distributed at local businesses, such as coffee shops and gas stations. Pamphlets are commonly used to help the community gain an understanding of wildlife or management needs (Bremmer and Park 2007). It will be important for stakeholders to understand that feral cats have a negative impact on wildlife populations and need to be managed accordingly.

Action: Grant proposal

Several different grants are to be applied for to assist with the funding of this management plan (appendix IV). By breaking up the funding with one or more grants, the assisting agencies are more likely to accept the management plan. Gaining a grant for this project will also

demonstrate that some stakeholders understand the need for management of feral cat populations.

Action: No action

The result of no action taken in regards to the feral cat populations of Matlacha Pass NWR and Matlacha Pass Aquatic Preserve would have severe consequences against shorebirds, ground nesting birds, and many terrestrial vertebrate species. Feral cats are currently one of the worst invasive species and have a devastating impact on bird and terrestrial vertebrate species (Dauphine 2009). If left unchecked, the populations of feral cats in MPNWR/MPAP have the potential to reach over 1 million individuals in a few years (Nicely 2014). Nesting shorebirds would suffer population declines and a loss of suitable nesting habitat. Ground nesting birds, such as the common ground dove, could be displaced from some of their native habitat (Perkins and Vickery 2007).

Actions to be utilized: All of the above actions will be utilized throughout different areas of the management area. Because of the importance of eradicating feral cats on MPNWR/MPAP, all of these actions will be implemented in these areas. For the rest of Lee County, only live trapping and cat ownership regulations will be used. I will not be using sharpshooters or toxic baits in the inhabited areas of Lee County.

Human dimensions: Human dimensions will play a large role in my management plan and is a reason why I selected the management actions that I did. I will not be employing sharpshooters or toxic baits in the populated areas of Lee County because of the likely public outcry. Although some of my eradication methods may seem unlikely to accomplish without some negative public relations, the consequences of

no action are far greater and justify my actions. As stated, the harm to native wildlife is great, and is the reason I will be using such radical methods to control this invasive species.

Assessment Protocol: Live trapping will be utilized on MPNWR, MPAP, and the remainder of Lee County for eradication of feral cats, however additionally it will be used as a population abundance indicator. Because trapping will be following strict guidelines, it serves as a suitable way to gain an understanding of the population abundance over time (Danner et al 2010). The number of feral cats trapped per week will show whether the population is increasing or decreasing.

Objective Assessment: Complete eradication of feral cats will be declared complete when there have been no captures in live traps, killings by sharpshooters, sightings of feral cats (either by technicians or sharpshooters), or cat sign detected (hair, prints, scat) for five weeks. Sharpshooters will be deployed once trapping success per week has decreased to 10% of the first months trapping success (averaged, cats/week), or when trapping efforts have been ongoing for 18 months (Nogales et al 2004). If the objective has not been completed within the timetable (two years), eradication efforts will be doubled and continue for another year, or until the objective has been completed (Nogales et al 2004). Additionally, if the objective has not been completed within the timeframe, the use of aerial spraying of feline distemper will be used on both islands. This method, although considered a radical approach to feral cat management, has proven to be successful in long term feral cat eradication (Nogales et al. 2004).

The population reduction of Lee County, Florida, will be determined complete when the trapping success shows a reduction of individuals by 80%, or when a confirmed 160,000 individuals have been removed from the population (through live-trapping). Although a recent

population is known (200,000 individuals, Hatley 2003), the number of individuals captured per week will show a change in the population (whether increase or decrease). By averaging the first four weeks' captures, there will be a base population index by which to measure a reduction (Bomford and Brien 1995). For example, if the average cats trapped per week in the first four weeks is 100 cats/week, then a reduction of 80% (the objective) would be 20 cats/week. The objective will be considered complete when either there is a continuous eight week average of 20 cats/week, or there have been 160,000 or more individuals removed from the population.

If the objective has not been completed within the set timetable (two years), other means of control will be implemented, for an additional year. These are to include cat-specific toxic baits and sharpshooters (Nogales et al. 2009).

There are currently several feral cat feeding stations in the populated area of Lee County. These are each home to large colonies of feral cats. If the objective is failed to be met within the specified timetable, more radical eradication methods will be needed to complete the objective. By placing toxic bait at the preexisting feeding stations, the majority of the feral cat colony could be quickly eradicated. However, there is likely to be a lot of public outcry if this action is used (Bremmer and Park 2007).

Conclusion

This management plan is designed to reduce the impact of feral cats on native wildlife, specifically nesting shorebirds. By removing feral cats from several islands which are important nesting habitat for shorebirds, there is expected to be an increase in the survival of these

populations. Resident mammals, such as beach mice, rabbits, and gray foxes, are also expected to benefit if the goal is completed. There will also be an increase in the amount of suitable habitat for songbirds.

Feral cats can devastate local populations of songbirds, shorebirds, and mammals (Apps 1983, Nogales et al. 2004, US Fish and Wildlife 2012). It is important to manage feral cats as an invasive species, otherwise native wildlife will suffer (Nogales et al. 2004, Winter 2004). There is a decreasing amount of available nesting habitat for shorebirds, and it is important to protect as much as possible (Below 1996). By managing feral cats on Matlacha Pass National Wildlife refuge and Matlacha Pass Aquatic Preserve, we can increase the survival and longevity of many shorebird species (Apps 1983, Below 1996, Gore 1991, Nogales et al. 2004).

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Appendix I
Free-ranging cat survey

We are interested in the amount of domestic free-ranging cats in Florida. This is a short survey to gain a better understanding of what percentage of the population owns domestic free-ranging cats.

1. Do you live in Florida?
    a. Yes
    b. Part time
    c. No
2. Do you own a cat(s)?
    a. Yes
    b. No
3. Does your cat(s) ever go outside?
    a. Yes
    b. No
4. How many hours a day is your cat(s) typically outside?
    a. 0
    b. 1-2
    c. 3-5
    d. 5+
5. Is your cat(s) spayed/neutered?
    a. Yes
    b. No
    c. Not sure
6. Do you feed your cat(s) outside?
    a. Always
    b. Sometimes
    c. Never
7. When outside, is your cat(s) contained within your property (cat proof fencing, etc…)?
    a. Yes
    b. No
8. How many outdoor cats do you own?
    a. 0
    b. 1
    c. 2
    d. 3+
9. To your knowledge, does your cat attract other cats to your property?
    a. Yes
    b. No
    c. Not sure
10. Are you aware that free-ranging cats can harm native wildlife species?
    a. Yes
    b. No

Created by Nicely. Last updated on 4/14/2014

Appendix II
Birding survey

I am interested in the amount of time locals spend birding. This is a short survey to gain an understanding of what amount of time the residents of Lee County, Florida spend enjoying birds.

1. How many hours a week do you spend birding?
    a. 0
    b. 1-2
    c. 2-5
    d. 5+

2. How important is birding to you?
    a. Very important
    b. Somewhat
    c. Not at all

3. Do you have bird feeders?
    a. Yes
    b. No

4. Does your birding consist of watching shorebirds?
    a. Always
    b. Sometimes
    c. Never

5. Are you happy with the amount of birds you are seeing?
    a. Yes
    b. No

6. Have you noticed a change in the bird populations over the past few years?
    a. Yes, Increase
    b. Yes, Decrease
    c. No

7. Have you ever seen cats while birding?
    a. Yes
    b. No

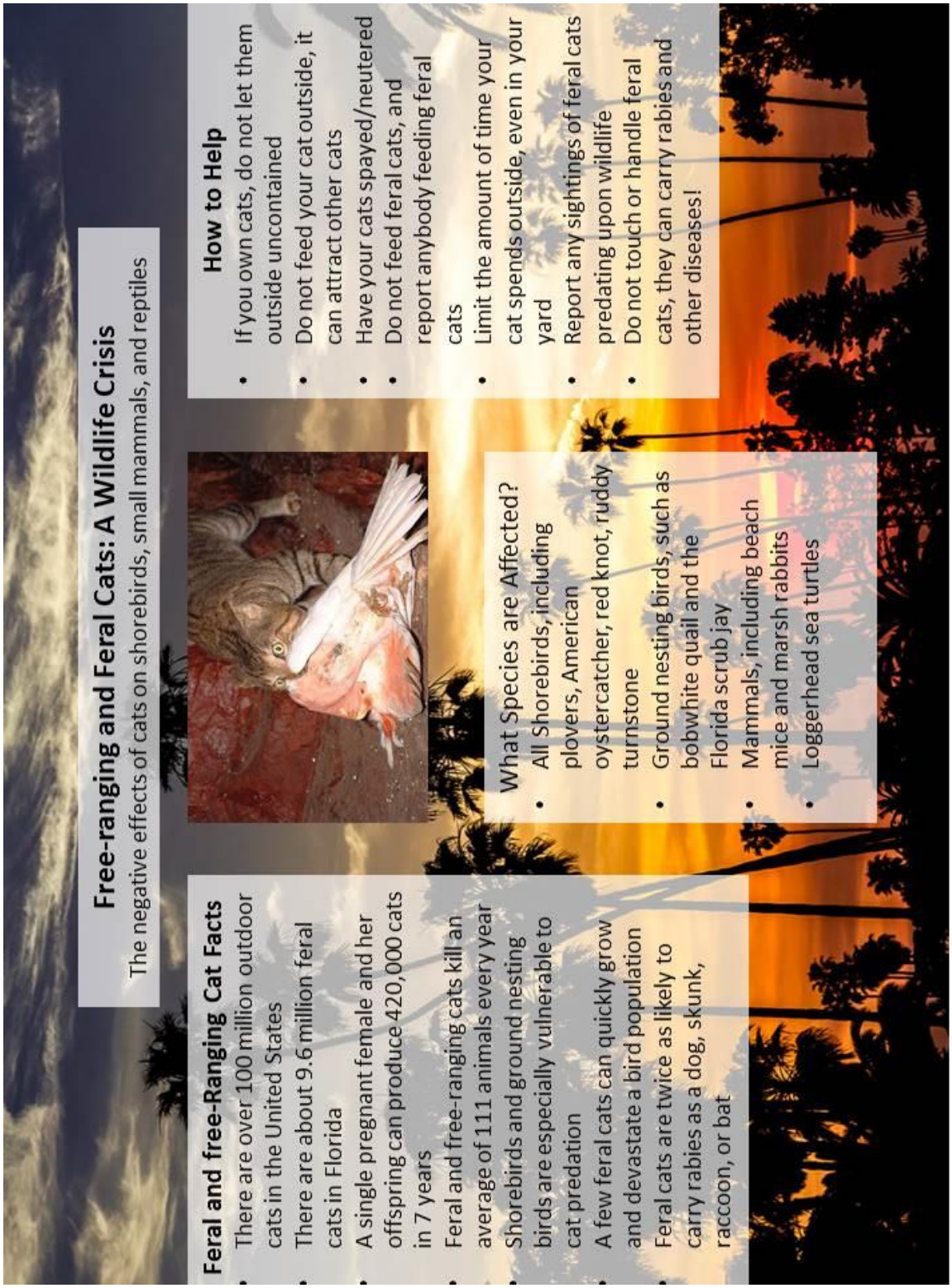
8. Are you aware that cats can substantially harm bird populations?
    a. Yes
    b. No

9. Would you like to see cats removed from areas where you bird?
    a. Yes
    b. No

Created by Nicely. 4/14/14

Appendix III

Feral Cat Flyer



Appendix IV

Matlacha Pass National Wildlife Refuge Feral Cat Management Grant Proposal

Alex Nicely

Proposal Summary (Executive Summary)

Feral cats are decimating wildlife, specifically native ground nesting shorebirds on Matlacha Pass National Wildlife refuge. There is a need to removal feral cats from MPNWR in order to protect local populations of shorebirds and small mammals. This management plan is designed to eradicate feral cats from MPNWR within two years using effective and proven modern techniques.

Background

Feral cats are one of the world's worst invasive species today (Lowe et al. 2003). Domestic cats are a very widespread species due to their human popularity. The extreme population growth rate of cats allows colonies to form in a very short amount of time (Hemmer 1976). A few stray cats can very easily populate an entire island within a few years (Nogales et al. 2004). Because of humans' attachment to domestic cats, we have unknowingly spread an invasive species throughout the world (Cole and Temple 1996).

Feral cats have a huge impact on native birds and small mammals; free-ranging cats have been shown to predate on up to 110 individuals annually (Mitchell and Beck 1992). On islands, feral cats have been estimated to kill up to 3 million animals yearly (Chapuis et al. 1994). Shore birds and ground nesting birds are the most affected by feral cat predation, especially during fledging periods (Chapuis et al. 1994). In Florida alone there are an estimated 271 million small mammals and 68 million birds predated on by domestic cats annually (Hatley 2003).

Lee County, Florida, is home to over 200,000 feral cats (Hatley 2003), and consists of important nesting habitat for several species of shorebirds (Below 1996). Matlacha Pass National Wildlife Refuge and Matlacha Pass Aquatic Preserve in Lee County, Florida, are home to many species of nesting shorebirds, as well as many small mammals (Below 1996). These preserves consist of several small islands, which make up the majority of shorebird nesting habitat in Lee County (FWC unpublished). With feral cat populations on these islands, the native shorebird population is heavily predated upon (Hatley 2003).

It is important to conserve habitat for migratory populations, as these populations can be especially vulnerable to extinction (Hatley 2003). While the habitat in MPNWR and MPAP is excellent for nesting shorebirds, these populations are not thriving (Below 1996). The presence of a highly reproductive mesopredator suppresses these populations (Dauphine and Cooper 2009). To prevent the further decline and eventual extinction of these populations, it is important to remove non-native predators from their nesting habitat (Dauphine and Cooper 2009).

Project Description

This project will consist of removing feral cats from Matlacha Pass National Wildlife Refuge and Matlacha Pass Aquatic Preserve in Lee County, Florida. The goal of this project is to reduce the impact of feral cats on nesting shorebirds and terrestrial vertebrates by removing feral cats from sensitive wildlife habitat. The removal of feral cats will be implemented in several ways, including: live-trapping and euthanasia, sharpshooters, toxic baits, and introduction of feline distemper.

Live trapping will consist of cage traps set throughout the study area. A high number of traps will be set in order to effectively and quickly reduce the cat population. This is a cost effective measure of feral cat removal and requires fewer man hours than sharpshooters.

In addition to using live trapping, other removal methods will consist of introduction of feline distemper. 10% of feral cats trapped will be introduced with a live strain of feline distemper and released on site. Toxic baits will also be implemented in cat specific sites. These sites will be made cat-specific by requiring the completion of several obstacles involving climbing and jumping in order to get to the bait. Toxic baits are a low maintenance and cost effective way of reducing the feral cat population.

Sharpshooters will also be introduced when the population has reached 10% of the original population. This will help keep the costs of operation low, but still maintain a high rate of success. Because of the high number of cats, it is much more cost effective to lower the number to a manageable level before introducing sharpshooters.

The management plan will be successful when there are no feral cats remaining on MPNWR or MPAP. It will be determined that there are no feral cats remaining when there have been no captures, sightings, or signs of cats for 3 weeks.

When successful, this management plan will increase the populations of nesting shorebirds on MPAP and MPNWR, as well as increase the available habitat for nesting shorebirds in these areas.

Project Timeline

The timeline for this management plan is to take course over two years. Live trapping, disease introduction, and toxic baits will be introduced at the start of the management plan. Sharpshooters will be introduced when the population has reached 10% of the original. The management plan is set to be completed within two years.

Funding for the project will be used for live trapping technicians, trapping equipment, baiting supplies, and for the purchase of live strains of feline distemper. Costs will be kept low by minimizing the man hours a field. Additionally, there will be associated costs, such as vehicle maintenance, field supplies, trap maintenance, and publication costs.

Budget

Funding from this grant will go towards startup costs, including traps, baits, and other field supplies. Funding for the two technicians will be provided by the US Fish and Wildlife Service, as will the vehicles.

Activity	**Supplies**	**Technicians**	**Total**
Live trapping	200 live traps - $6500 Bait - $40/day Processing/euthanasia - $15/cat	2/day - $208/day	Daily - $473 Trapping total - $351,790
Toxic Baits	200 kilograms polymer coated 1080 - $2,000	Included in trapping	$2,000
Feline Distemper	1,000 doses - $15,000	Included in trapping	$15,000
Miscellaneous supplies and vehicle maintenance	$10,000	Included in trapping	$10,000
Total			**$378,790**