Florida Scrub-Jay Umbrella Habitat Conservation Plan
And
Environmental Assessment

November 2007

INTRODUCTION

The federally threatened Florida scrub-jay (*Aphelocoma coerulescens*) (scrub-jay) is found in peninsular Florida. Over the past 100 years, urban development has encroached into historically pristine habitat for this species. The current geographic range of scrub-jays within peninsular Florida overlaps with areas that have previously been platted and partially developed for a variety of urban land uses. About 25 percent of the remaining scrub-jay population is located in areas that have been developed for residential, commercial, industrial, or other urban uses.

PURPOSE AND NEED

Since the listing of the scrub-jay in 1987 as threatened (52 FR 42661), owners of property in urban areas that is occupied by scrub-jays have been challenged with the difficulty of complying with section 9 of the Endangered Species Act of 1973, as amended (Act), which prohibits the take of scrub-jays. The majority of landowners with property in urban areas that is occupied by scrub-jays have been faced with the choice of complying with the Act by not clearing or constructing in occupied scrub-jay habitat, complying with the Act by obtaining a section 10(a)(1)(B) incidental take permit (ITP) prior to land clearing, or violating the take prohibitions under section 9 of the Act by clearing lots without coverage from an ITP. Each of these alternatives has limitations; landowners may incur costs associated with ongoing property tax burdens and local government assessments for infrastructure improvements while not developing property they own, or they may incur costs and time constraints associated with obtaining an ITP. Lot owners who choose not to pursue an ITP for land clearing, when such is appropriate, may be faced with violating section 9 of the Act, which can result in fines and/or imprisonment.

The cost and complexity of complying with the Act is thought to have precluded many individual lot owners from seeking ITPs for otherwise lawful activities, such as land clearing and construction. Additionally, most local governments have not embraced large-scale scrub-jay conservation planning efforts and have not encouraged their residents to comply with the Act because of perceived legal and fiscal constraints the Act may impose on them. The failure of individual lot owners to seek regulatory relief from the prohibitions of take has also resulted in the continued degradation of scrub-jay habitat because their properties remain unmanaged and the impacts of habitat development are not mitigated.

Indian River County and the City of Sebastian successfully completed an ITP application and received authorization to take scrub-jays within city limits resulting from residential and commercial development. Likewise, the City of Palm Bay, in Brevard County, completed their own HCP and received authorization for residential development within their jurisdiction. These planning efforts resulted in the only area-wide habitat conservation plans (HCP) currently available to landowners whose property is occupied by scrub-jays. However, these HCP and incidental take authorizations are restricted to the city limits of the City of Sebastian or the City of Palm Bay. They offer no regulatory or financial relief to landowners in other areas of the state.

Recognizing the limitations that the above-mentioned alternatives place on owners of property in urban areas, the U.S. Fish and Wildlife Service (Service) considered methods to streamline the section 10(a)(1)(B) permitting process, while still providing conservation benefits to the scrub-jay. This umbrella HCP and environmental assessment (HCP/EA) is the culmination of our review of streamlining options. Although the focus of this HCP/EA is on modifications to existing permitting processes, the premise for these modifications is based on available biological information indicating that Florida scrub-jays in some urban areas will not persist long-term and are unlikely to substantially contribute to the recovery of the species. These biological principles are discussed in greater detail in the following sections.

BIOLOGICAL GOALS

The Service is mandated by the Act to protect and recover federally listed species, including the scrub-jay. However, the Act also requires that the Service issue ITPs when applicants submit adequate ITP applications as required by 50 CFR 17.32. The Service believes that effective minimization and mitigation measures implemented as a result of ITPs issued in response to this umbrella HCP/EA can assist in meeting our obligations for the protection and recovery of federally listed species.

The goal of this HCP/EA is two-fold. First, the Service anticipates that this umbrella HCP/EA will provide landowners whose urban properties are occupied by scrub-jays with a streamlined permitting process that will assist them in obtaining timely incidental take authorization. Second, with increases in incidental take authorization resulting from this umbrella HCP/EA, we expect a corresponding increase in the amount of minimization and mitigation. As discussed later in this document, we anticipate that mitigation funding provided under this umbrella HCP/EA will aid in the protection and conservation of at-risk scrub-jay populations. This umbrella HCP/EA will provide a streamlined section 10 permitting process over a seven-year term.

PLAN AREA

The scrub-jay is currently distributed from the northern peninsula to south Florida, not including extreme south Florida. In total, 34 Florida counties contain occupied scrub-jay habitat or possibly occupied scrub-jay habitat (Figure 1). Within this Plan Area, landowners who meet the eligibility criteria defined below would be able to participate in the umbrella HCP/EA. In general, these areas include urbanized platted lots with remnant scrub-jay habitat. The following environmental analyses consider impacts of the umbrella HCP/EA within lands encompassed by the eligibility criteria.

Eligibility Criteria

Not all landowners with property in urban areas that is occupied by scrub-jays will be able to use this umbrella HCP/EA. We considered the typical affected landowner in determining which properties would be eligible to participate under this umbrella

HCP/EA. With respect to the size of any particular parcel of property that would be eligible to use this HCP/EA, we considered that a one-acre parcel of land likely encompasses the majority of previously-platted subdivisions and commercial inholdings in most urban environments. This is based on our experience with considering ITP applications by numerous small-lot owners. Essentially all applications for ITPs have been for less than one acre within existing urban, or other subdivided areas. Owners of larger parcels of land are likely to have flexibility in siting structures and infrastructure to minimize and possibly avoid impacts to scrub-jays. In our experience, developments with larger lot sizes more often occur in areas with more viable scrub-jay populations, and would therefore, fall beyond the intended scope of this HCP/EA. Including larger properties under this umbrella HCP/EA would necessitate that the HCP/EA address a variety of possible minimization and mitigation measures. This level of detail would lead to a more complex analysis on the part of the Service. Increasing the level of complexity of our review would compromise our ability to reach our stated goal of providing a streamlined incidental take authorization process.

The Service will also reduce complexity by limiting participation to those landowners who are ready to develop their property soon after they receive individual incidental take authority, and who intend to retain ownership or control of the affected property through the time it is completely cleared and developed. Requirements for funding assurances, given below, will result in mitigation costs being paid before the permit is given to the participating landowner. Landowners who are unable, or never intend, to develop a covered property before they sell or transfer the property would create additional administrative complexity for the Service through the transfers of individual permits to new owners or purchasers. The purchaser of a previously-covered, but undeveloped lot, would need their own incidental take authority before they could develop the property. The Service would then have to consider transferring the individual permit to a new owner. In order to reduce the number of potential transfer requests, we will limit the term of an individual permit to one year and limit participation to owners who intend to complete the development of the lot themselves.

Property

To be eligible for participation in this HCP/EA, a property must meet all of the following criteria:

1. Each property (individually identifiable by plat number) must be one (1) acre or less in size and located within the Plan Area;

2. Each property must have been platted prior to January 1, 2006.

3. Each property must be accessible by two-wheel drive cars or trucks through a dedicated ingress and egress right-of-way that is maintained by a government entity, local taxing district, or road maintenance agreement (or similar instrument).

4. Each property must be located in an "urban" area. A property is considered to be located in an urban area if governmental, institutional, educational, commercial, and/or residential buildings, or infrastructure associated with such structures, are located within 425 feet of the property.

In general, this HCP/EA is intended to include any property that is part of an established, partially built-out subdivision. While the term "subdivision" is loosely used in this context, it is meant to confer that the property is located in an area where historical planning efforts resulted in the approved development of roads and infrastructure that ultimately were designed and intended to create an urban environment.

This umbrella HCP/EA does not restrict the number of properties for which an individual may apply for an incidental take permit, nor does it limit the number of properties that may be included in any one incidental take permit application. However, not all lots that otherwise meet the eligibility criteria described above will require inclusion in this HCP/EA, because some properties are already developed and others do not contain scrub-jay habitat. This HCP/EA does not differentiate between properties based on future land uses or the current zoning of each property.

If a property that is otherwise eligible to participate in this umbrella HCP/EA lies within the covered area of a municipal area-wide HCP, the affected property will not be eligible for inclusion in this umbrella HCP/EA. Instead, the landowner will be required to participate in the area-wide HCP in which the property lies. This relationship to other HCPs is explained further in the Permitting Process section, below.

The intent of this HCP/EA is to address the incidental take and conservation needs of the scrub-jay. Property owners anticipating the incidental take of other federally listed species would not be eligible to use this umbrella HCP/EA. They would have to complete a separate HCP and incidental take permit application. The Service will review incidental take permit applications for other species independent of this HCP/EA.

Applicant

Applicants wishing to participate under this HCP/EA must have sufficient authority or rights over the property to implement the measures of the HCP/EA, including, but not limited to, the ability to control the timing of land-clearing and other activities that will result in take of scrub-jays. Applicants wishing to participate in this umbrella HCP/EA must intend and be capable of completing the authorized activity within one year of individual permit issuance. Any applicant who wishes to deviate from the scope, terms, and conditions described herein will not qualify under this HCP/EA.

LISTED SPECIES IN PLAN AREA

Species Covered by HCP/EA

This umbrella HCP/EA addresses the incidental take and conservation needs of the scrub-jay. As described in the eligibility criteria section, this HCP/EA does not address incidental take of any other listed species. Incidental take authorization for species other than the scrub-jay can only be obtained by submitting a separate HCP and incidental take permit application for those species.

Other Species in Plan Area

Other species that may occur in association with the scrub-jay include at least 21 federally listed endemic plant species on the Lake Wales Ridge: Florida bonamia (*Bonamia grandiflora*), pygmy fringe-tree (*Chionanthus pygmaeus*), Florida perforate cladonia (*Cladonia perforata*), pigeon wings (*Clitoria fragrans*), short-leaved rosemary (*Conradina brevifolia*), Avon Park harebells (*Crotalaria avonensis*), Garrett's mint (*Dicerandra christmanii*), scrub mint (*D. frutescens*), scrub buckwheat (*Eriogonum longifolium* var. *gnaphalifolium*), snakeroot (*Eryngium cuneifolium*), Highlands scrub hypericum (*Hypericum cumulicola*), scrub blazingstar (*Liatris ohlingerae*), scrub lupine (*Lupinus aridorum*), Britton's beargrass (*Nolina brittoniana*), papery whitlow-wort (*Paronychia chartacea*), Lewton's polygala (*Polygala lewtonii*), wireweed (*Polygonella basiramia*), sandlace (*P. myriophylla*), scrub plum (*Prunus geniculata*), Carter's mustard (*Warea carteri*), Florida ziziphus (*Ziziphus celata*), and at least four others on the Atlantic Coastal Ridge: four-petal pawpaw (*Asimina tetramera*), fragrant prickly-apple (*Cereus eriophorus* var. *fragrans*), Lakela's mint (*Dicerandra immaculata*), and tiny polygala (*Polygala smallii*). Also, the threatened bluetail mole skink (*Eumeces egregius lividus*) and sand skink (*Neoseps reynoldsi*) occur on the Lake Wales Ridge, and the threatened eastern indigo snake (*Drymarchon corais couperi*) is known to occur with scrub-jays. If any of these other species are known to occur on the property, the applicant must submit a separate HCP and incidental take permit application for the scrub-jay and the other species. They would not be eligible to participate in this umbrella HCP/EA.

Biological Overview of the Scrub-Jay

Scrub-jays are about 10 to 12 inches long and weigh about 3 ounces. They are similar in size and shape to blue jays (*Cyanocitta cristata*) but differ significantly in coloration (Woolfenden and Fitzpatrick 1996a). Unlike the blue jay, the scrub-jay lacks a crest. It also lacks the conspicuous white-tipped wing and tail feathers, black barring, and bridle of the blue jay. The scrub-jay's head, nape, wings, and tail are pale blue, and its body is pale gray on its back and belly. Its throat and upper breast are lightly striped and bordered by a pale blue-gray "bib."

Scrub-jay sexes are not distinguishable by plumage, and males, on the average, are only slightly larger than females (Woolfenden 1978). The sexes may be identified by a distinct "hiccup" call vocalized only by females (Woolfenden and Fitzpatrick 1986). Scrub-jays that are less than about five months of age are easily distinguishable from

adults; their plumage is smoky gray on the head and back, and they lack the blue crown and nape of adults. Molting occurs between early June and late November and peaks between mid-July and late September (Bancroft and Woolfenden 1982). During late summer and early fall, when the first basic molt is nearly done, fledgling scrub-jays may be indistinguishable from adults in the field (Woolfenden and Fitzpatrick 1984). The wide variety of vocalizations of scrub-jays are described in detail by Woolfenden and Fitzpatrick (1996b).

Scrub-jays forage mostly on or near the ground, often along the edges of natural or man-made openings. They visually search for food by hopping or running along the ground beneath the scrub or by jumping from shrub to shrub. Insects, particularly orthopterans (e.g.; locusts, crickets, grasshoppers, beetles) and lepidopteran (e.g., butterfly and moth) larvae, form most of the animal diet throughout most of the year (Woolfenden and Fitzpatrick 1984). Acorns are the most important plant food (Fitzpatrick *et al*. 1991). From August to November each year, scrub-jays may harvest and cache 6,000 to 8,000 oak (*Quercus* spp.) acorns throughout their territory (DeGange *et al*. 1989). Acorns are typically buried 0.5 to 1 inch beneath the surface of bare sand patches in the scrub during fall, and retrieved and consumed in winter and early spring. On the Atlantic Coastal Ridge, acorns are often cached in pine trees, either in forks of branches, in distal pine boughs, under bark, or on epiphytic plants, between 1 to 30 feet in height (B. Toland, Service, pers. comm. 1996). Other small nuts, fruits, and seeds also are eaten. In suburban areas, scrub-jays will accept supplemental foods such as peanuts, corn, and sunflower seeds.

Vertebrate prey items form the minority of the diet, but may include a wide array of species weighing up to 1 ounce (B. Toland, Service, pers. comm. 1996). Notable vertebrate prey species documented for scrub-jays on both the Lake Wales Ridge and the Atlantic Coastal Ridge include green treefrog (*Hyla cinerea*), squirrel treefrog (*H. squirella*), green anole (*Anolis carolinensis*), brown anole (*A. sagrei*), Florida scrub lizard (*Sceloporus woodi*), six-lined racerunner (*Cnemidophorus sexlineatus*), black racer (*Coluber constrictor*), peninsula crowned snake (*Tantilla relicta relicta*), rough greensnake (*Opheodrys aestivus*), house mouse (*Mus musculus*), cotton mouse (*Peromyscus gossypinus*), oldfield mouse (*P. polionotus*), and Florida mouse (*Podomys floridanus*) (Woolfenden and Fitzpatrick 1984).

The scrub-jay is a relict species of fire-dominated oak scrub habitat that occurs on well-drained sandy soils in peninsular Florida (Laessle 1958, 1968; Fitzpatrick *et al.* unpubl. data). Scrub-jays are extremely habitat-specific, sedentary, and territorial. Florida scrub-jays are a cooperative breeding species, living in family groups ranging from two birds (a single mated pair) to extended families of eight adults and one to four juveniles (Woolfenden and Fitzpatrick 1984). Fledgling Florida scrub-jays stay with the breeding pair in their natal territory as helpers, forming a closely-knit cooperative family group. Helpers remain with the family group until a breeding vacancy becomes available outside the territory or within it. Habitat availability, therefore, is the most limiting factor for this species.

Population dynamics are greatly influenced by cooperative living. In birds that do not exhibit this behavior, the young of the previous year primarily replace the breeders that die. Therefore, immediate impacts on the size of the breeding population can be seen as a result in variation in reproduction and mortality. However, in scrub-jays and other cooperative breeders, breeders are replaced by a large pool of helpers. The size of the breeding population, therefore, is not affected as strongly by how many breeders may die each year, or by how many young are produced. Because of this, the number of breeding pairs of scrub-jays rather than number of individuals is used as the most important measure of population size. A breeding pair is defined as an adult female and adult male that defend a territory, with or without one or more helpers, whether or not they attempt to nest or successfully fledge young (Woolfenden and Fitzpatrick 1984).

Because they are cooperative breeders, populations of scrub-jays are more sensitive to the spatial arrangement of habitat than they are to environmental and demographic variation. The presence of helpers buffers scrub-jay populations against annual variation only when helpers can readily fill breeding vacancies as they occur. Scrub-jay helpers typically disperse short distances to fill breeding vacancies. When breeding pairs are spatially isolated from one another, the dispersal of helpers is disrupted, and the buffering effect of the helper class is lost. When this happens, populations are more likely to become extirpated (Woolfenden and Fitzpatrick 1984).

The scrub-jay was listed as a threatened species because of loss, fragmentation, and degradation of scrub habitats throughout Florida. Xeric oak scrub on the Lake Wales Ridge is predominantly made up of four species of stunted, low-growing oaks: sand live oak (*Quercus geminata*), Chapman oak (*Q. chapmanii*), myrtle oak (*Q. myrtifolia*), and scrub oak (*Q. inopina*) (Myers 1990). In optimal habitat for scrub-jays, these oaks are 3 to 10 feet high, interspersed with 10 to 50 percent unvegetated, sandy openings, and a sand pine canopy of less than 20 percent (Woolfenden and Fitzpatrick 1990). Trees and dense herbaceous vegetation are rare. Other vegetation noted along with the oaks includes saw palmetto (*Serenoa repens*) and scrub palmetto (*Sabal etonia*), as well as woody shrubs such as Florida rosemary (*Ceratiola ericoides*) and rusty lyonia (*Lyonia ferruginea*). Scrub-jays occupy areas with less scrub oak cover and fewer openings elsewhere within its range (Breininger 1981; Thaxton and Hingtgen 1996). The predominant communities here are oak scrub and scrubby flatwoods. Scrubby flatwoods differ from scrub by having a sparse canopy of slash pine; sand pines are rare. Although scrub oak and scrub palmetto are restricted to the Lake Wales Ridge, the other species mentioned above are predominant in these areas as well. Runner oak (*Q. minima*), turkey oak (*Q. laevis*), bluejack oak (*Q. incana*), and longleaf pine (*Pinus palustris*) also have been reported.

Scrub-jays need large open landscapes for long-term population persistence (Woolfenden and Fitzpatrick 1984, 1991). Scrub-jays do not use forests and avoid areas near forests (Breininger *et al.* 1995). Optimal scrub-jay habitat, defined by conditions when reproductive success exceeds mortality, is maintained by relatively frequent fires (Woolfenden and Fitzpatrick 1984, 1991; Breininger *et al.* 1995; Duncan *et al.* 1995). Natural fire patterns have been disrupted by humans in most scrub landscapes that

support scrub-jay habitat such that fire can no longer burn nor be allowed to burn across the landscape. Infrequent fire is one of the greatest threats to scrub-jay population persistence, making restoration and prescribed fire management of scrub habitat one of the most important parts of scrub-jay recovery.

The most significant problems facing the scrub-jay continue to be habitat destruction, fragmentation, and human interference with the natural fire regime. The survival of the species will depend on protecting and managing scrub habitat throughout the current viable range of the species.

FACTORS AFFECTING SCRUB-JAYS IN PLAN AREA

Baseline Information

Historically, oak scrub occurred as numerous isolated patches in peninsular Florida. These patches were concentrated along both the Atlantic and Gulf coasts and on the central ridges of the peninsula (Davis 1967). Probably until as recently as the 1950s, scrub-jay populations occurred in the scrub habitats of 39 of the 40 counties south of, and including Levy, Gilchrist, Alachua, Clay, and Duval counties. Historically, most of these counties would have contained hundreds or even thousands of breeding pairs (Fitzpatrick *et al.* unpubl. data). Only the southernmost county, Monroe, lacked scrub-jays (Woolfenden and Fitzpatrick 1996a). Although scrub-jay numbers probably began to decline when European settlement began in Florida (Cox 1987), the decline was first noted in the literature by Byrd (1928). After 40 years of personal observation of the Etonia scrub (now known as Ocala National Forest), Webber (1935) observed many changes to the previously-undisturbed scrub habitat found there, noting that "The advent of man has created a new environmental complex."

A state-wide scrub-jay census was last conducted in 1992-1993, at which time there were an estimated 4,000 pairs of scrub-jays left in Florida (Fitzpatrick *et al*. 1994). The scrub-jay was considered extirpated in ten counties (Alachua, Broward, Clay, Dade, Duval, Gilchrist, Hernando, Hendry, Pinellas, and St. Johns), and were considered functionally extinct in an additional five more counties (Flagler, Hardee, Levy, Orange, and Putnam), where ten or fewer pairs remained (see Figure 1). Recent information indicates that there are at least 12 to 14 breeding pairs of scrub-jays located within Levy County, higher than previously thought (K. Miller, Florida Fish and Wildlife Conservation Commission (FWC), pers. comm. 2004), and there is at least one breeding pair of scrub-jays remaining in Clay County (K. Miller, FWC, pers. comm. 2004). A scrub-jay has been documented in St. Johns County as recently as 2003 (J.B. Miller, Florida Department of Environmental Protection (FDEP), in litt. 5/13/03). Populations are close to becoming extirpated in Gulf coast counties (from Levy south to Collier) (Fitzpatrick *et al*. 1994; Woolfenden and Fitzpatrick 1996a). In 1992-1993, population numbers in 19 of the counties (Table 1) were below 30 or fewer breeding pairs. Based on the amount of destroyed scrub habitat, scrub-jay population loss along the Lake Wales Ridge is 80 percent or more since pre-European settlement (Fitzpatrick *et al.* 1991). Since the early

1980s, Fitzpatrick *et al*. (1994) estimated that in the northern third of the species' range, the scrub-jay has declined somewhere between 25 and 50 percent. The species may have declined by as much as 25 to 50 percent in the last decade alone (Stith *et al*. 1996).

On protected lands, scrub-jays have continued to decline due to inadequate habitat management (Stith 1999). However, over the last several years, steps to reverse this decline have occurred, and management of scrub habitat is continuing in many areas of Florida (Hastie and Eckl 1999; Stith 1999; TNC 2001).

In some areas of the range of the scrub-jay, it appears that the 1992-1993 state-wide census underestimated populations of scrub-jays, especially in areas where little was known about the status of the species. The state-wide census in 1992-1993 estimated about 145 pairs of scrub-jays remained within Sarasota County (Fitzpatrick *et al*. 1994), although Christman (2000) found 196 pairs of scrub-jays. Likewise, Miller and Stith (2002) documented 54 pairs of scrub-jays within the Deep Creek area of Charlotte County, while the state-wide census in 1992-1993 documented only 19 pairs (Fitzpatrick *et al*. 1994). Given that habitat has continued to degrade and development activity has increased in these areas, it is unlikely that these increased numbers reflect a population increase, but rather a greater effort in the survey process over that undertaken in 1992-1993 (Miller and Stith 2002). Two possible reasons that the 1992-1993 state-wide census underestimated some populations are (1) there was inadequate time and/or resources to survey poorly-known areas and (2) scrubby flatwoods were often overlooked because surveyors relied on soil maps, which are not reliable predictors of where scrubby flatwoods occur.

Stith (1999) used a spatially-explicit individual-based population model developed specifically for the scrub-jay to complete a metapopulation viability analysis of the species. The species' range was divided into 21 metapopulations demographically isolated from each other (Appendix C). Metapopulations are defined as collections of relatively discrete demographic populations distributed over a landscape; these populations are connected within the metapopulations through dispersal or migration (National Research Council 1995). A series of simulations were run for each of the 21 metapopulations based on different scenarios of reserve design ranging from the minimal configuration consisting of only currently protected patches of scrub (no habitat acquisition option) to the maximum configuration, where all remaining significant scrub patches were acquired for protection (complete habitat acquisition option). The assumption was made that all areas that were protected were also restored and properly managed.

Results from Stith's (1999) simulation model included estimates of extinction, quasi-extinction (the probability of a scrub-jay metapopulation falling below 10 pairs), and percent population decline. These were then used to rank the different state-wide metapopulations by vulnerability. The model predicted that five metapopulations (Northeast Lake, Martin, Merritt Island, Ocala National Forest, and Lake Wales Ridge) have low risk of quasi-extinction. Two of the five (Martin and Northeast Lake), however, experienced significant populations declines under the "no acquisition" option;

the probability for survival of both of these metapopulations could be improved with more acquisition of habitat.

Eleven of the remaining 21 metapopulations were shown to be highly vulnerable to quasi-extinction if no more habitat were acquired (Central Brevard, North Brevard, Central Charlotte, Northwest Charlotte, Citrus, Lee, Levy, Manatee, Pasco, St. Lucie, and West Volusia). The model predicted that the risk of quasi-extinction would be greatly reduced for 7 of the 11 metapopulations (Central Brevard, North Brevard, Central Charlotte, Northwest Charlotte, Levy, St. Lucie, and West Volusia) by acquiring all or most of the remaining scrub habitat. The model predicted that the remaining four metapopulations (Citrus, Lee, Manatee, and Pasco) would moderately benefit if more acquisitions were made.

Stith (1999) classified two metapopulations (South Brevard and Sarasota) as moderately vulnerable with a moderate potential for improvement; they both had one or more fairly stable subpopulations of scrub-jays under protection, but the model predicted large population declines. The rest of the metapopulation could collapse without further acquisitions, making the protected subpopulations vulnerable to epidemics or other catastrophes.

Three of the metapopulations evaluated by Stith (1999) (Flagler, Central Lake, and South Palm Beach) were classified as highly vulnerable to quasi-extinction and had low potential for improvement since little or no habitat is available to acquire or restore.

Since the time that Stith completed his modeling exercise, Breininger *et al*. (2001, 2003) conducted additional studies within Brevard County. Dispersal data, improved habitat mapping, and new buffering results provide reasonable evidence that the South Brevard and Central Brevard metapopulations, as defined by Stith (1999), show greater connectivity, through observed scrub-jay dispersals, than was previously evident. Therefore, these can now be treated as one metapopulation. With this change made, there are currently 17 remaining metapopulations of scrub-jays that are potentially viable over the long-term.

The analysis clearly shows two items that are essential for recovery of this species: (1) restoration and management of publicly-owned scrub lands already under preservation and (2) additional purchase of scrub lands for preservation in key areas. Without both, it is unlikely that recovery can be achieved.

Threats

The existence of scrub-jays throughout their range depends on the existence of a particular seral stage of oak scrub habitat with unvegetated openings in sandy soils. This habitat occurs naturally only in localized patches associated with recent or ancient shoreline deposits. By the time the scrub-jay was listed under the Act (52 FR 42661), a large proportion of these habitat patches had been converted for human use or were slated for imminent conversion. Most of the coastal scrub habitat had already been cleared for

beachfront hotels, houses, and condominiums, and much of the central Florida scrub had been converted to citrus groves, housing developments, and commercial real estate. It was estimated that 40 percent of occupied scrub habitat had already been converted to other uses, and the total population of scrub-jays had declined by at least half. As a result of rapid increase in human population numbers throughout central Florida, the pace of housing and agricultural development had accelerated since the 1960s, and it showed no signs of slowing.

Suppression of fire by humans was identified as a factor in the species' decline at the time of the listing. Historically, lightning strikes started fires, which maintained the sparse low scrub habitat needed by scrub-jays. Human efforts to suppress these fires to protect human interests allowed the scrub to become too dense and tall to support populations of scrub-jays. Vehicular mortality of scrub-jays due to collisions along roadsides was recognized as a cause of the decline in some parts of the species' range.

Scrub habitats have continued to decline throughout peninsular Florida since listing occurred, and habitat destruction continues to be one of the main threats to the scrub-jay. Cox (1987) noted local extirpations and major decreases in numbers of scrub-jays and attributed them to the clearing of scrub for housing and citrus groves. Eighty percent or more of the scrub habitats have been destroyed along the Lake Wales Ridge since pre-European settlement (Fitzpatrick *et al.* 1991). Fernald (1989), Fitzpatrick *et al*. (1991, 1994), and Woolfenden and Fitzpatrick (1996a) noted that habitat losses due to agriculture, silviculture, and commercial and residential development have continued to play a role in the decline in numbers of scrub-jays throughout the state. State-wide, estimates of scrub habitat loss range from 70 to 90 percent (Bergen 1994; Woolfenden and Fitzpatrick 1996a; Fitzpatrick *et al*. unpubl. data). Various populations of scrub-jays within the species' range have been monitored closely, and more precise estimates of habitat loss in these locations are available.

Toland (1999) estimated that about 85 percent of pre-European settlement scrub habitats had been converted to other uses in Brevard County. This is due mainly to development activity and citrus conversion, which were the most important factors that contributed to the scrub-jay decline between 1940 and 1990. A total of only 10,656 acres of scrub and scrubby flatwoods remain in Brevard County (excluding federal ownership), of which only 1,600 acres (15 percent) is in public ownership for the purposes of conservation. Less than 1,977 acres of an estimated pre-settlement of 14,826 acres of scrubby flatwoods habitat remain in Sarasota County, mostly occurring in patches averaging less than 2.5 acres in size (Thaxton and Hingtgen 1996). Only 10,673 acres of viable coastal scrub and scrubby flatwoods remained in the Treasure Coast region of Florida (Indian River, St. Lucie, Martin, and Palm Beach counties) according to Fernald (1989). He estimated that 95 percent of scrub had already been destroyed for development purposes in Palm Beach County.

Habitat destruction not only reduces the amount of area scrub-jays can occupy, but also increases fragmentation of habitat. As more scrub habitat is altered, the habitat is cut into smaller and smaller pieces, and separated from other patches by larger distances; such

fragmentation increases the probability of inbreeding and genetic isolation, which is likely to increase extinction probability (Fitzpatrick *et al*. 1991; Woolfenden and Fitzpatrick 1991; Snodgrass *et al.* 1993; Stith *et al*. 1996; Thaxton and Hingtgen 1996). Dispersal distances of scrub-jays in fragmented habitat are further than in optimal unfragmented habitats, and demographic success is poor (Thaxton and Hingtgen 1996; Breininger 1999).

Human interference with natural fire regimes has continued to play a major part in the decline of the scrub-jay and today may exceed habitat loss as the single most important limiting factor (Woolfenden and Fitzpatrick 1991, 1996a; Fitzpatrick *et al*. 1994). Lightning strikes cause virtually all naturally-occurring fires in south Florida scrub habitat (Abrahamson 1984; Hofstetter 1984). Fire has been noted to be important in maintenance of scrub habitat for decades (Nash 1895; Harper 1927; Webber 1935; Davis 1943; Laessle 1968; Abrahamson *et al*. 1984). Human efforts to prevent and/or control natural fires have allowed the scrub to become too dense and tall to support populations of scrub-jays, resulting in the decline of local populations of scrub-jays throughout the state (Fernald 1989; Fitzpatrick *et al*. 1994, unpubl. data; Percival *et al*. 1995; Stith *et al*. 1996; Thaxton and Hingtgen 1996; Woolfenden and Fitzpatrick 1990, 1996a; Toland 1999). Woolfenden and Fitzpatrick (1996a) cautioned, however, that fire applied too often to scrub habitat also can result in local extirpations. Experimental data at Archbold Biological Station (Fitzpatrick and Woolfenden, unpubl. data) show that fire-return intervals varying between 5 and 15 years are optimal for long-term maintenance of productive scrub-jay populations in central Florida. These intervals also correspond with those yielding healthy populations of endangered scrub plants (Menges and Kohfeldt 1995; Menges and Hawkes 1998). Optimal fire-return intervals may, however, be shorter in coastal habitats (Breininger and Schmalzer 1990; Schmalzer and Hinkle 1992a, b; Breininger *et al*. 1995, 1998).

Stith *et al*. (1996) estimated that at least 2,100 breeding pairs of scrub-jays were living in overgrown habitat state-wide. Toland (1999) reported that most of Brevard County's remaining scrub (estimated to be only 15 percent of the original acreage) is extremely overgrown due to fire suppression. He further suggests that the overgrowth of scrub habitats reduces the number and size of sand openings which are crucial not only to scrub-jays, but also many other scrub plants and animals. Reduction in the number of potential scrub-jay nesting sites, acorn cache sites, and foraging sites presents a problem for scrub-jays. Fernald (1989) reported that overgrowth of scrub results not only in the decline of species diversity and abundance but also a reduction in the percentage of open sandy patches (Fernald 1989; Woolfenden and Fitzpatrick 1996b). Fitzpatrick *et al*. (1994) believed that fire suppression was just as responsible as habitat loss in the decline of the scrub-jay, especially in the northern third of its range. Likewise, the continued population decline of scrub-jays within Brevard County between 1991 and 1999 has been attributed mainly to the overgrowth of remaining habitat patches (Breininger *et al*. 2001). Breininger *et al*. (1999) concluded that optimal habitat management is essential in fragmented ecosystems maintained by periodic fire, especially to lessen risks of decline and extinction resulting from epidemics and hurricanes.

Housing and commercial developments within scrub habitats are accompanied by the development of roads. Since scrub-jays often forage along roadsides and other openings in the scrub, they are often killed by passing cars. Research by Mumme *et al*. (2000) along a two-lane paved road indicated that clusters of scrub-jay territories found next to the roadside represented population sinks (breeder mortality exceeds production of breeding-aged recruits), which could be supported only by immigration. Since this species may be attracted to roadsides because of their open habitat characteristics, road mortality presents a significant and growing management problem throughout the remaining range of the scrub-jay (Dreschel *et al*. 1990; Mumme *et al*. 2000), and proximity to high-speed paved roads needs to be considered when designing scrub preserves (Woolfenden and Fitzpatrick 1996a).

Another potential problem in suburban areas supporting scrub-jays is supplemental feeding by humans (Bowman and Averill 1993; R. Bowman unpubl. data, cited in Woolfenden and Fitzpatrick 1996a; Bowman 1998). The presence of additional food may allow scrub-jays to persist in fragmented habitats, but recruitment in these populations is lower than in native habitats. However, even though human-feeding may postpone local extirpations, long-term survival cannot be ensured in the absence of protecting native oak scrub habitat necessary for nesting.

Scrub-jays in suburban settings often nest high in tall shrubbery. During March winds, these nests tend to be susceptible to destruction (R. Bowman and G.E. Woolfenden unpubl data, cited in Woolfenden and Fitzpatrick 1996b; Bowman 1998).

Research on scrub-jays in urban areas has provided preliminary information on the demographic reactions of scrub-jays to urban pressures. Thaxton and Hingtgen (1996) demonstrated that scrub-jay dispersal behavior was substantially different in urban settings than in natural scrub habitat. When compared with scrub-jays in natural conditions, both male and female urban scrub-jays exhibited dispersal characteristics different from scrub-jays in natural conditions. Males tended to disperse further because the likelihood of inheriting high quality habitat within urban areas was low. Females dispersed greater distances, at an earlier age in urban settings due to the lack of adjacent unoccupied habitat and single males (e.g. single males typically established territories by breeder replacement). With increasing dispersal distance at a younger age, females are susceptible to increased mortality. Thaxton and Hingtgen (1996) concluded that female scrub-jays dispersing from urban areas have a higher mortality rate than those dispersing from natural scrub areas. They also suggested that habitat in suburban areas, if abandoned or unoccupied due to death of the mated pair, had a higher probability of remaining vacant, leading to the conclusion that populations of scrub-jays in suburban areas were likely to decrease and eventually be extirpated.

Bowman and Averill (1993) evaluated demographic patterns of scrub-jays along a gradient from nearly complete residential development to undisturbed scrub and compared these patterns to those of scrub-jays occupying undisturbed, unfragmented scrub. At the highest residential development density, they found that territory and family group size was significantly smaller than in low density residential areas or natural scrub.

They also found that scrub-jays in densely developed areas had significantly poorer nesting success than scrub-jays occupying less-densely developed areas or natural scrub, and those scrub-jays in areas of dense residential development produced fewer fledglings than in other areas. Overall, fledgling survival in residential areas (at any development density) was significantly lower than survival of fledglings in undisturbed, unfragmented scrub. Adult survival in densely developed areas was also thought to be lower than scrub-jays living in less dense residential areas or native habitats.

Similarly, Toland (1991) found that scrub-jays in urban areas had lower nesting success when the level of residential development increased. In relatively pristine conditions, he found scrub-jay nesting success to average 87 percent, while in fragmented, moderately-developed, suitable habitat, nesting success averaged 77 percent. In highly fragmented (extensive residential development), poor quality scrub, nesting success declined to 59 percent, and in highly modified, poor quality habitat (e.g., lawns), nest success averaged only 25 percent. Corresponding annual productivity was 2.2., 1.8, 1.2, and 0.5 young fledged under these habitat conditions, respectively. Like Thaxton and Hingtgen (1996), Bowman and Averill (1993) also concluded that habitat fragmentation associated with residential development and other urban uses increases mortality during dispersal.

The adverse effects of residential development on the demography of scrub-jays are likely due to a combination of factors. Bowman and Averill (1993) alluded to the presence of "dangerous" habitats within suburban settings, including roads which increase the likelihood of collisions with motor vehicles, exotic turfgrasses and ornamental shrubs and trees which increase vulnerability to predators and competitors and provide suboptimal nesting substrates, and overgrown scrub which also may attract predators and competitors. Predictable food sources, such as bird feeders, also tend to congregate scrub-jays and make them more susceptible to domestic predators.

The prospect for scrub-jays inhabiting urban settings is not good. Even if habitat conditions remained constant, recent research has shown that adverse demographic effects are expected to result in the slow decline of scrub-jays in urban areas. Consequently, although scrub-jays may persist for some time in urban settings, particularly in low density residential areas, they maintain no long-term demographic value to the species as a whole. More alarming is the fact that many residential areas still containing scrub-jays will become increasingly unsuitable for this species as residential communities approach "build-out" and the remaining scrub habitat becomes overgrown. It is likely, therefore, that the continued pressures associated with residential development will accelerate the declining trend observed in urban scrub-jays.

Scrub-jays currently occupying residential areas described in this HCP/EA have little chance of long-term persistence, and are therefore, unlikely to appreciably contribute to the recovery of this species. Based on available biological information, the Service expects that even without the issuance of incidental take permits, most families of scrub-jays occupying the residential areas covered by this HCP/EA will not persist because of reduced survival from habitat degradation and fragmentation. Decreasing habitat quality, including fragmentation and structural alteration of the vegetative composition of the

habitat, will over time, reduce availability of natural foods and security habitat, eliminate natural nesting substrates, adversely affect dispersal behavior, increase conspecific competition, and increase mortality due to collisions with automobiles and predation by domestic animals, primarily cats.

ALTERNATIVES CONSIDERED

This section presents the preferred alternative and other alternatives that have been considered by the Service. The National Environmental Policy Act (NEPA) requires that Federal agencies consider a range of alternatives that could reduce the environmental impacts of the particular projects under consideration.

In addition to developing this umbrella HCP/EA, which will be available for use by small landowners in urban areas, the Service reviewed other possible options available to conserve the scrub-jay while ensuring landowner compliance with the Act. As required under section 10(a)(2)(A)(iii), the Service considered one alternative action that would have avoided take. Two other alternatives require landowners to develop or participate in other HCP planning processes. For the reasons stated below, however, the Service believes that none of these alternatives effectively conserves scrub-jays while providing small landowners with an efficient permitting process.

Alternative 1: Take Avoidance

Landowners whose property otherwise meets the eligibility criteria for participating in this umbrella HCP/EA would avoid taking scrub-jays by abandoning development plans for their property. Under this alternative, landowners would either purchase other property outside of occupied scrub-jay habitat where they could build dwellings and infrastructure without the need to obtain a section 10 permit or abandon development plans altogether.

Alternative 2: Development of Individual HCPs (No Action Alternative)

This alternative assumes that landowners will pursue individual HCPs to address the impacts of their development on the scrub-jay. This approach is the section 10 permitting process currently being implemented.

Alternative 3: Countywide or Rangewide HCP

Under this alternative, the Service will rely on the implementation of large-scale, comprehensive HCPs developed by other entities to provide opportunities to address scrub-jay conservation at a landscape scale while considering development interests of many individual property owners.

Alternative 4: Rangewide Urban Umbrella HCP/EA (Preferred Alternative)

The proposed umbrella HCP/EA provides a streamlined section 10 permitting process over a seven-year term for individual small landowners that minimizes and mitigates impacts to the scrub-jay. Individual small landowners would apply for amendment of a previously evaluated ITP authorization.

ENVIRONMENTAL CONSEQUENCES

The purpose of this section is to examine the environmental consequences anticipated with implementation of each of the alternatives described above. This evaluation includes an analysis of the direct and indirect effects, and cumulative impacts associated with the alternatives. Direct effects are those that occur immediately or directly because of the proposed action. Indirect effects are defined as those "which are caused by the action and are later in time or farther removed in distance but are still reasonably foreseeable" (40 CFR 1508.8). NEPA and CEQ (Council of Environmental Quality) regulations require that cumulative effects be evaluated along with the direct and indirect effects of each alternative. Cumulative impacts are defined as the sum of the incremental impacts of past, present, and reasonably foreseeable future actions (40 CFR 1508.7). As discussed above, the Service believes that the various county comprehensive plans sufficiently address existing and anticipated future effects of urban growth on natural and human environments (Table 1). These documents provide a 10-year planning and growth management strategy that identify current and projected future impacts on the environment and measures that will be undertaken to minimize adverse effects to human and natural resources. While the comprehensive plans do not provide analyses and assessments of individual projects, the additive and cumulative effects of increasing urbanization as dictated by existing land use designations are holistically assessed for the planning period. Properties eligible for coverage by the HCP/EA would have been platted in accordance with the current plans shown in Table 1, or else would have been "grandfathered" into them. Because the comprehensive plans address all of the elements of the human environment that are identified under NEPA and outline measures to minimize impacts to these resources or to maintain or enhance levels of service, further detailed analyses of these elements would be redundant. Accordingly, the Service incorporates by reference the natural and human environmental analyses of the 34 comprehensive plans listed in Table 1. We therefore focus the remainder of our assessment on the effects of the alternatives on the threatened scrub-jay.

Cultural resource aspects of the human environment were also considered separately by the Service. We determined that implementation of the proposed HCP/EA would not affect significant cultural resources, and transmitted this finding to Florida's State Historic Preservation Officer on August 15, 2005. The State Historic Preservation Officer concurred with this finding by letter of September 15, 2005.

Alternative 1: Take Avoidance

Under Alternative 1, the Service would not issue incidental take permits for scrub-jays. Landowners in areas occupied by scrub-jays would not be protected from potential section 9 violations should they choose to develop their properties. Consequently, landowners could abandon plans to develop the lots, sell the lots, or hold the lots in an undeveloped state and evaluate future development alternatives. As a result, land clearing would not occur in habitat occupied by scrub-jays.

Soils

No impact to soils is expected due to this alternative.

Groundwater

No impact to groundwater is expected due to this alternative.

Scrub-Jays

Abandonment of development plans or sale of properties for conservation purposes removes the risk of taking scrub-jays over the short term, but provides little assurances that scrub-jays will persist over the long term in these urban areas. Abandonment of development plans does not include any provisions for habitat management to restore or maintain suitable scrub-jay habitat. As a result, this alternative would create a gradual decline in habitat suitability due to vegetative succession. Eventually, habitat conditions would become degraded to the extent that scrub-jays would be extirpated.

The acquisition of urban property occupied by scrub-jays will not likely provide long-term assurances that scrub-jays will persist in perpetuity. The influence of the existing urban landscape in many areas already contributes to low demographic success among scrub-jays. The protection and management of remaining undeveloped lots in this urban matrix may not reverse, or even offset, these existing negative influences.

Socioeconomic Considerations

Under this alternative, landowners may incur an increased financial burden due to an inability to sell property containing occupied scrub-jay habitat. Landowners may have limited opportunities to sell or otherwise dispose of these properties to recuperate these costs because: (1) acquisition of small parcels within developing urban areas are not actively pursued by most conservation organizations; (2) many local governments do not have land acquisition programs; and (3) the value of these properties would be discounted below current market prices due to the presence of federally-listed species. If landowners did successfully sell, however, they might not recover costs associated with the original purchase price, cumulative tax burden, and incidental intermittent expenses such as impact fees related to locally-sponsored infrastructure improvements. In either case,

landowners would likely assume a financial loss on property currently occupied by scrub-jays.

In addition to these costs, landowners would need to acquire other properties that do not need a section 10 permit in order to build their structure and infrastructure. These additive costs would vary by region and could range from several thousand to more than one-hundred-thousand dollars, based on the Service's recent experiences in scrub-jay mitigation and recovery activities.

Alternative 2: No Action: Individual Landowners Continue to Develop HCPs

Soils

This alternative will result in disturbance to soil horizons, but the magnitude and location of impact cannot be specified because it is not possible to determine which landowner may seek incidental take authorization. It is possible that each private landowner within the 14,928 acres of occupied, urban scrub-jay habitat would eventually seek an ITP, in which case, there would be about 15,000 acres of impact to soils in peninsular Florida. Land clearing, grading and contouring, and excavation for utility and infrastructure installation all have the potential to disturb soil horizons.

Groundwater

The Floridian Aquifer is the major potable water source for much of Florida. Residential and commercial facilities requiring an ITP will require potable water once the dwellings are occupied. Many municipalities will provide domestic water to these facilities, and these additional water users will withdraw more water from the aquifer. Water use varies widely depending on the land use. Residential users consume an average of about 90 gallons per day, per household. Assuming that the 14,928 acres will eventually contain about 30,000 dwellings, most of which will be residential homes, we estimate that this alternative will result in the eventual withdrawal of an additional 1.34 million gallons per day from the Floridian Aquifer.

Scrub-Jays

This alternative could result in the gradual loss of up to 14,928 acres of occupied scrub-jay habitat through issuance of ITPs to individual landowners. We expect the loss of habitat value and function to occur more slowly under this alternative than either Alternative 3 or 4 because individual landowners may not immediately seek incidental take permits due to the complexity and cost of the current permit process. Urban development will further fragment habitat resulting in declining demographics and reducing fitness in urban scrub-jays. These effects will be the same as Alternative 4. In addition, there will be a loss of usable scrub-jay habitat even if landowners do not seek ITPs because continued habitat fragmentation and private ownership will preclude future management of currently occupied habitat. As a result, much of the 14,928 acres of

habitat that is now occupied will gradually become unsuitable for scrub-jays, and the numbers of scrub-jays in urban areas will decline over time.

Adverse effects will be mitigated more slowly under this alternative than either Alternative 3 or 4 because individual landowners may not immediately seek incidental take permits due to the complexity and cost of the current permit process. Mitigation under this alternative would occur in accordance with the Service's Florida Scrub-Jay Mitigation Guidance, dated February 24, 2004, which requires acquisition at a two to one ratio of acquisition to impact of occupied or restorable habitat. This mitigation ratio is expected to provide a net conservation benefit for the species by protecting habitat in larger land areas specifically set aside for scrub management, and by removing adverse factors such as domestic animal predation and road mortality commonly associated with human residential and commercial development. From mitigation funding, the Service anticipates that up to 29,856 acres will be purchased and subsequently restored and managed by local governments, agencies, or non-profit conservation organizations that may ultimately receive fee title to property. The slower timing of individual permit actions, however, limits the buying power of mitigation land acquisition funds. This alternative reflects the current approach. After approximately eight years of mitigating small-lot impacts to scrub-jays in this manner, no land acquisition has occurred largely due to the slow accumulation of funds.

Socioeconomic Considerations

Individual ITP applications currently can take as long as two years for the Service to process. Thus, while the financial obligations of individually submitted HCPs may be similar to the umbrella approach, the timeframe for obtaining an ITP by individuals is protracted. This extended review period could cause additional financial hardship through increased building costs to the applicants. Additionally, due to rapidly increasing land costs, any agreed upon mitigation costs would be eroded in value over the timeframe of the review resulting in less land acquired and fewer acres managed. Further habitat degradation over the period of review would potentially result in loss of scrub-jays before the review was completed. The extended review period is a major disincentive for applicants to go through the process of obtaining an ITP. This could encourage unauthorized, unregulated land development that would not benefit the scrub-jay.

Alternative 3: Countywide or Rangewide HCPs

Countywide or a rangewide HCPs would be the most comprehensive habitat plans for the scrub-jay. At present, no countywide or rangewide plans have been developed. There are, however, two citywide plans operating in the City of Sebastian, Indian River County, and in the City of Palm Bay, Brevard County.

Soils

The impacts to soils will be similar to those described in Alternative 2, except that impacts will occur over a shorter period of time because, once developed and

implemented, countywide or rangewide HCPs will likely result in more individuals seeking incidental take than under Alternative 2.

Groundwater

We anticipate impacts due to this alternative will be similar to Alternative 4, except that the impacts may occur over a longer period of time since completion of countywide or rangewide HCPs is expected to take longer to develop and implement than under the preferred alternative.

Scrub-Jay

Countywide or rangewide HCPs will adversely affect breeding, feeding, and sheltering habitat as participating landowners exercise their authority to develop in occupied scrub-jay habitat. Even within these more comprehensive plans, urban development will further fragment habitat resulting in declining demographics and reducing fitness in urban scrub-jays. These effects will be the same as Alternative 4. Through these plans mitigation is optimized through conservation reserve designs based on the Florida Scrub-Jay Recovery Plan (U.S. Fish and Wildlife Service 1990) and the Service's Florida Scrub-Jay Mitigation Guidance, dated February 24, 2004. These plans are the best conservation options for impacts to private lands.

The goal of a mitigation area for a countywide or area-wide HCP would be to acquire, at a two to one ratio of acquisition to impact of occupied or restorable habitat. This is expected to provide a net conservation benefit for the species by protecting habitat in larger land areas specifically set aside for scrub management and by removing adverse factors such as domestic animal predation and road mortality commonly associated with human residential and commercial development.

Socioeconomic Considerations

Countywide or rangewide HCPs are complex planning efforts and would require a substantial commitment of time and funding to reach fruition. To date, three county governments previously began development of countywide HCPs for scrub-jays, but none were successfully completed. Each of these efforts ultimately failed because local governments did not have the time, financial resources, or political will to complete them. One municipality, the City of Sebastian, Indian River County, successfully completed an HCP for scrub-jays over a 10-year period. The City of Palm Bay, Brevard County has also implemented an HCP for scrub-jays. No effort has been made, nor has there been discussion, regarding the development of a comprehensive rangewide HCP for scrub-jays.

Under this alternative, many local governments and possibly one or more State agencies would need to embrace the HCP process and subsequently develop and implement regionally-based HCPs or one rangewide HCP for scrub-jays. However, past coordination efforts suggest low local government interest in regional planning efforts,

and the prognosis for future participation is not good. The development of a rangewide HCP would require commitments of one or more State agencies. The Service believes that authority lies with State agencies to develop such plans; however, this planning effort does not appear to be ripe at this time.

Based on historical HCP development efforts by a few municipalities, it is estimated that 5-7 years would be needed to develop regionally-based HCPs. Development of a rangewide HCP with a State agency could take several years, and identification of partners necessary to implement the HCP could prove problematic. In the interim, further habitat degradation will occur on private lands, and scrub-jay populations will further decline. The Service will continue, however, to work on implementation of these long-range solutions.

Alternative 4: Scrub-Jay Rangewide Umbrella HCP/EA (Preferred Alternative)

The preferred alternative is development of a 34-county umbrella HCP/EA that covers small landowners ($\leq$ 1 acre) with occupied scrub-jay habitat in the urban landscape of peninsular Florida for a seven-year term.

Soils

Clearing, grading and fill activities will affect native soils on site during construction activities. Soil horizons will be disturbed and material is likely to be removed permanently where fill is used as a foundation for the structure. Up to 14,928 acres of soil impacts can be expected under this alternative.

Groundwater

We expect impacts similar to the other action alternatives, except that the impacts to groundwater will occur more quickly under this alternative than under Alternatives 2 or 3.

Scrub-Jay

According to the 1992-1993 habitat assessment of scrub communities in Florida (Fitzpatrick *et al.* 1994), there are 669,358 acres of scrub habitat in the Plan area, of which 112,867 acres are within the urban areas. The Service estimates 14,928 acres of the occupied scrub-jay habitat within the urban landscape may be impacted by this HCP/EA. This is explained in detail in the Anticipated Take section below. If completely built out, there could be a loss of 14,928 acres of scrub-jay habitat, and the scrub-jays would be displaced from parcels within the Plan area by such development. Depending on the availability of unoccupied habitat in the vicinity of the development, the scrub-jays might: (1) try to expand their territory to other adjacent, but less suitable, habitat to compensate for the loss of habitat; (2) persist in their reduced territory; or (3) abandon their territory. In any event, scrub-jays will be impacted by the loss of habitat

and the reduction in the amount and quality of habitat that remains. These factors will likely affect feeding, breeding, and sheltering habitat for the species.

These adverse effects will be mitigated under this alternative in accordance with the Service's Florida Scrub-Jay Mitigation Guidance, dated February 24, 2004. Acquisition at a two to one ratio of acquisition to impact of occupied or restorable habitat is expected to provide a net conservation benefit for the species by protecting habitat in larger land areas specifically set aside for scrub management. It is also expected to benefit the species by removing adverse factors such as domestic animal predation and road mortality commonly associated with human residential and commercial development. The Service anticipates up to 29,856 acres will be purchased and subsequently restored and managed by local governments, agencies, or non-profit conservation organizations that may ultimately receive fee title to property acquired with mitigation funding.

Socio-Economic Considerations

Under this alternative, landowners will develop their property to an amount and extent allowable under local and State laws and regulations. Further land development will result in temporary employment for residential and commercial contractors and provide long-term employment opportunities at the proposed commercial facilities. Completed residential units will provide housing for additional families, thereby increasing the economic basis of the communities by a similar number of households. The resulting households will require public resources and other infrastructure that will increase demands on these services.

Expediting the issuance of individual lot permits through this HCP/EA will reduce the loss of value in the mitigation funds provided for land acquisition and maintenance and provide a much greater return on investment for the scrub-jays. Furthermore, this approach will reduce the Service's HCP review workload and will benefit individual lot owners by transforming a process that currently takes over a year into one that could be completed in about 4 to 6 weeks. This also frees Service resources to address other listed species issues.

Cumulative Effects

This section assesses the magnitude and significance of the environmental consequences of the proposed action in the context of the cumulative effects of other past, present, and reasonably foreseeable future actions within the affected environment. The Service must first show the environmental consequences expected in the Plan Area without the proposed action. The Service must then compare the environmental consequences resulting from the No Action Alternative with the environmental consequences resulting from the proposed action and determine whether the impacts to these resources are significant.

Past actions

The Plan Area has experienced substantial human population growth over the last 50 years and will continue to do so. As a result, much of the natural environment in the Plan area has been altered (Myers 1990, Fitzpatrick *et al.* 1994). Tens of thousands of individual residential, commercial, recreational, infrastructure, and agricultural ventures have been undertaken in the area during this time, and the landscape and ecosystems have been correspondingly modified to accommodate these human uses. Changes in the environment for urban and agricultural uses typically signify losses in the function and value of the original biological community. Floodplains, wetlands and other aquatic resources, soils, groundwater, and federally listed species have been adversely affected by anthropogenic changes in the environment. These are summarized below.

Present actions

Many of the same actions that influenced scrub habitat and scrub-jays in the past continue to affect these resources today. Although many municipalities and county governments have adopted ordinances to protect ecologically significant resources, such as scrub habitat, none extend their protective ordinances to small residential parcels or agricultural lands in general. As a result, much of the current and ongoing development on small residential parcels within Florida is impacting the human environment.

There are a number of ongoing local, county, State, and Federal actions that are likely to result in conservation benefits for scrub-jays. Since 1990, over 2,200 acres of scrub habitat have been preserved and managed for scrub-jays as a result of section 7 and section 10 actions. In addition, around $4,200,000 in funds were collected for management and additional land purchase.

Mumme and Below (1995, 1999) used the Archbold Biological Station population of scrub-jays as a source for the only carefully documented translocation experiment to date, in which scrub-jays were moved to a restored scrub tract near Naples. This small population has remained extant for a decade, but has needed occasional augmentation of female scrub-jays to adjust skewed sex ratios as a result of its small population size. They noted that behavioral characteristics of the scrub-jay make them suitable candidates for successful relocation and concluded that relocation is a potentially useful technique for restoration of breeding populations in parts of their historical range where they are now absent. Mumme and Below (1995, 1999) detailed needs for acceptable recipient sites and gave recommendations for future relocation trials.

David Breininger and colleagues have combined Geographic Information System (GIS) techniques with field studies to document the ecology and habitat use of color-marked scrub-jays since 1980 at Merritt Island National Wildlife Refuge and Kennedy Space Center (Breininger et al. 1991; Breininger 1992; Breininger et al. 1995, 1996, 1998, 1999, 2001, 2003). Breininger's model for habitat characteristics in coastal scrub and scrubby flatwoods underscores the importance of an open habitat structure containing no more than 15 percent pine canopy cover. Breininger also has conducted surveys and

some banding of scrub-jays throughout Brevard County, including the population on the barrier islands south of Cocoa.

In addition, in 2006, the Service developed with The Nature Conservancy (TNC) a mitigation fund to rapidly acquire scrub-jay conservation lands. With proper restoration and management, these lands would afford optimal habitat for scrub-jays and other scrub species of plants and animals.

Future impacts

The Plan Area is under considerable development pressure, as much of it lies within peninsular Florida in areas of major transportation routes and elevated well-drained soils that are highly sought after as building sites. It also contains the climate, infrastructure, and housing that is attractive to the retirement population. As a result, many of the same factors that historically affected scrub-jay habitat are likely to continue to negatively affect these resources in the foreseeable future. However, predicting the extent and magnitude of these adverse effects is difficult since human population growth in the Plan Area will undoubtedly be influenced by many unpredictable, extrinsic factors such as economic conditions, population demography, and long-term weather patterns.

As a result of the anticipated increases in the human population within the Plan Area, the Service believes that most of the scrub-jays persisting in urban areas will continue to decline in number and distribution due to environmental and demographic factors. The reasons for the continued decline can be summarized as follows:

- Habitat degradation (i.e., overgrowth) will continue due to fire suppression.

- Degraded habitat results in higher predation rates compared to rates observed under natural settings within optimal habitat.

- Because of habitat fragmentation due to urbanization, vehicular-induced mortalities increase with greater road densities and proximity to nest sites and foraging habitats.

- Recruitment rates will be insufficient to replace existing breeders due to elevated predation and interspecific competition.

Scrub-jays are also likely to decline in abundance and distribution as a result of permanent habitat alteration. This loss of habitat will occur in the future due to actions authorized by the Service through either section 7 or 10 of the Act or through non-regulated activities. Future Service actions in the Plan Area will be determined by the extent to which the agency has opportunities to review development proposals, including review of other Federal agencies' permitting actions or through county environmental protection measures implemented for individual development projects by local municipalities or county government. For projects with no other Federal agency involvement, the opportunity for Service review is less certain because existing

exclusions in local and county environmental review processes often preclude opportunities for Service involvement. In many instances, local and county ordinances place the burden of regulatory compliance on the landowner who either does not understand the regulatory process for protection of federally listed species or is unwilling to contact the Service to discuss compliance with the Act.

When combined, the effects of future habitat loss due to degradation or fragmentation will ultimately result in a decline in the abundance of scrub-jays in the developed portion of the Plan Area. It is likely that scrub-jays will persist only on conservation lands that are adequately managed to maintain suitable habitat. Land acquired with mitigation funds is anticipated to increase the number of scrub-jay groups through protection and restoration of habitat for a net benefit to the species. Other small parcels of scrub may also be used by scrub-jays in the future, but the contribution of these areas, whether managed or not, to the demographic success of this species is not known.

Cumulative Impacts

The proposed Federal action could result in the loss of up to 14,928 acres of habitat occupied by scrub-jays, and the preservation and management or enhancement of up to 29,856 acres of habitat. Compared to the No Action Alternative, the proposed issuance of the ITP will result in a greater gain in scrub-jay habitat over the long term, by having an organized and coordinated land acquisition program and more rapid means to acquire and conserve scrub-jay habitat.

LEVEL OF TAKE

Anticipated Take

The Service estimated the anticipated level of take of scrub-jays by using GIS analysis to calculate the total acreage of occupied habitat found within unprotected urban areas throughout the range of the scrub-jay. This was accomplished by first identifying the locations of scrub-jays in Florida (Fitzpatrick *et al*. 1994). Additional data from surveys conducted by Sarasota (2004) and Charlotte Counties (Miller and Stith 2002) were added. Where scrub-jay locations from recent surveys were identified within 33 feet of earlier survey data, they were excluded to avoid double-counting scrub-jays that had persisted in their territories since earlier surveys. Each scrub-jay data point was buffered with a 13-acre territory based upon the estimated average scrub-jay territory size in the urban landscape (Bowman 1998). Scrub-jay data were also excluded where they occurred on conservation lands. The data layer used to identify public/conservation lands is a compilation of Federal, state, county, local and private entities who manage land for conservation purposes and where the Service believes future residential development is unlikely to occur (Florida Natural Areas Inventory 2005).

An urban boundary layer, developed from 2000 census data (Florida Department of Transportation 2005), was added to identify those areas where historical planning efforts resulted in “urban” infrastructure (roads, commercial, and residential development).

Where the 13-acre territorial boundaries intersected or occurred in the aforementioned urban boundary, but did not occur wholly within conservation or public lands, they were included in our analysis for the anticipated level of take.

Based on the GIS analysis described above, we estimated that scrub-jays occupy 14,928 acres in urban areas and have the potential to be impacted by future development (Figure 1). However, we recognize this value overestimates the actual amount of habitat that may be occupied by scrub-jays because some properties have already been developed and contain houses, businesses, or other structures and infrastructure that are not currently occupied by scrub-jays. We did not attempt to eliminate developed areas from the 14,928 acres we define as occupied scrub-jay habitat because these data were not available for all areas. Furthermore, the total number of acres occupied by scrub-jays also includes property that would not meet the eligibility criteria to participate under this HCP/EA (e.g., some portion of properties will be larger than one acre).

Impacts Likely to Result From the Proposed Taking

Assuming that every eligible landowner will participate under this HCP/EA during the seven years this HCP/EA is proposed to be in effect, the Service anticipates that 14,928 acres of occupied scrub-jay habitat in urban areas will be taken. It is expected that scrub-jays occupying lands included in this HCP/EA will be harmed, including death or injury. Foraging, nesting, and sheltering habitat will be altered, affecting the ability of scrub-jays to feed, breed, and evade predators. However, the Service believes impacts of this take on scrub-jays throughout their range on peninsular Florida will not be significant. A growing body of literature discussed elsewhere in this HCP/EA suggests that various factors of the urban environment have deleterious effects on scrub-jays and that these adverse effects will ultimately result in the extirpation of scrub-jays from most urban areas. Ultimately, scrub-jays occupying habitat in urban areas have little chance of long-term survival. However, urban scrub-jays probably play an important role in the short-term by providing colonists to restored or well-managed habitat, when the habitat occurs within dispersal distance of urban scrub-jays (Thaxton and Hingtgen 1996; Breininger *et al*. 1998).

As a result of the existing level of impact that urbanization has on scrub-jays and the fact that the long-term prognosis for scrub-jay survival in urban settings is not favorable, we do not anticipate that the taking of scrub-jays in urban areas as a result of the implementation of this HCP/EA will significantly affect our ability to conserve and recover this species.

PERMITTING PROCESS

Eligible landowners would apply to the Service using the standard 3-200-56, application for incidental take permit. To indicate their assumption of the responsibilities of this HCP/EA, an eligible landowner must complete the Certificate of Intent to Participate found in Appendix A. A step-by-step outline of the application process is provided in Appendix B.

This HCP/EA does not restrict the number of single-family lots for which an individual may apply for an incidental take permit, nor does it limit the number of lots that may be included in any one incidental take permit application provided that each lot meets the eligibility requirements. However, not all lots within the plan area described above will qualify for inclusion in this HCP/EA, because many are already developed, some are larger than 1 acre in size, and others do not contain scrub-jay habitat. Any properties that are covered by a municipal, area-wide HCP also would not qualify for inclusion in this HCP/EA.

Relationship to other Conservation Plans or Incidental Take Permits

To date, two other area-wide scrub-jay HCPs have been implemented in Florida, developed by Indian River County and the City of Sebastian, TE026007-0; and the City of Palm Bay, TE118199-0. Future area-wide HCPs ideally would operate in a manner such that a lot owner would not recognize the need for an HCP because the incidental take permit process would become an "automatic" part of local building authorizations. Scrub-jay issues would be covered by an area-wide plan as a part of the normal building clearances as established by a county. Also, participation in an area-wide HCP would probably be easier for affected lot owners. For example, they would not have to make an additional application to the Service, and the mitigation cost per lot owner would likely be lower as a local plan would have more participating landowners.

In order to avoid potential conflicts with any future area-wide plans, this umbrella HCP/EA will not be available to landowners who are covered by an approved area-wide HCP. Foreseeable conflicts might include the need to ensure equitability in the collection and dispersal of mitigation funds, to assist a municipality in collecting a necessary level of mitigation funds, or to ensure that potential mitigation funds stay within the area-wide's plan area. As noted above, two such area-wide HCPs, for the City of Sebastian and City of Palm Bay, are currently in operation.

MINIMIZATION AND MITIGATION

The mitigation requirements described in this document are intended to meet section 10 issuance criteria and the Service's section 7(a)(1) obligation, but they also will contribute to the recovery of the scrub-jay throughout its range. Three of the five objectives identified by the recovery plan (U.S. Fish and Wildlife Service 1990) focus on the protection, management, and restoration of scrub-jay habitat. Though efforts have been made to achieve these objectives, continuing declines in the number and distribution of scrub-jays throughout their range indicate that additional emphasis must be placed on conserving and restoring scrub-jay habitat. The TNC scrub-jay conservation fund (Scrub-Jay Fund) agreement includes land acquisition criteria consistent with the recovery plan to direct acquisition to those areas of greatest benefit to scrub-jay metapopulations (Appendix C).

On-Site Minimization

Minimization of impacts is required pursuant to section 10(a)(2)(B) of the Act for issuance of an ITP. Participation under this HCP/EA will require that landowners not remove, alter, or clear vegetation on their property during the scrub-jay nesting season that begins March 1 and ends June 30 each year.

Off-Site Mitigation

To mitigate for take of the scrub-jay, there are two options: (1) pay into the Scrub-Jay Fund; or (2) purchase credits from an approved mitigation or conservation bank. If funds are paid into the Scrub-Jay Fund, individual applicants will need to calculate their mitigation payment as described below. Of course, we must ensure that the mitigation funding will be sufficient to acquire and manage scrub-jay habitat. The Service expects that the cost of acquiring scrub-jay habitat will vary substantially from one region of the state to another; mitigation costs could range from several thousand dollars to tens of thousands of dollars. To ensure that participants in this HCP/EA provide sufficient mitigation funding to acquire scrub-jay habitat, we obtained land valuation data necessary to complete Appendix D from a State-certified general real estate appraiser. To accomplish this, we reviewed sales data from 22 regions of the State from the period April to October 2006 using the following criteria: (1) sales for nominal consideration were not considered; (2) to the extent practicable, we considered sales data for upland properties; (3) sales data were evaluated for a variety of parcel sizes to account for variability based on parcel size; (4) only sales of unimproved or not substantially improved property were evaluated; and (5) sales data for restricted access properties were not considered.

From the data that resulted from this land valuation, we used reported sales figures for noncommercial and nonindustrial properties that were greater than 20 acres in size and predominately uplands. We excluded sales data for the smallest parcel-size category (10 to 20 acres) because future conservation efforts will likely not target properties this small.

Sales data for the Ocala National Forest and Merritt Island metapopulations were not available because these metapopulations are encompassed primarily by Federal lands. Also, there are three metapopulations (Palm Beach, Flagler, and Central Lake) that are not prioritized in the land acquisition guidance provided to TNC because these metapopulations are small and have limited opportunities for additional habitat acquisitions. We felt that providing a mitigation value specific to these five metapopulations was not justified since we do not anticipate habitat acquisitions in these areas. We used an average of the sales values from the remaining sixteen metapopulations to provide an estimate for these five metapopulations inn Appendix D.

In addition to these sales data, the per-acre costs shown in Appendix D also incorporate a $1,250 per acre management endowment and 19.21 percent overhead charge by TNC to manage the fund.

We will adjust land values annually in July using the average percent change in just value of land from the previous year, within the 34 counties covered by the HCP/EA. This calculation will employ the State of Florida, Department of Revenue Property Valuations and Tax Data for land classified as agricultural, as shown in Table 10 of: http://dor.myflorida.com/dor/property/databk.html.

Conservation Fund Contribution

Applicants participating under this option will contribute funding to the Scrub-Jay Fund. The Scrub-Jay Fund will be used to fund fee title and less than fee title acquisition of scrub-jay habitat, management and restoration of scrub-jay habitat and monitoring and applied research necessary to conserve this species. The mitigation measures described in this HCP/EA and specified performance measures outlined in the authorizing ITP will minimize and mitigate the effects of take of the scrub-jay that may result from use of this HCP/EA by affected landowners. Specifically, these measures will address several of the recovery tasks outlined in the Florida Scrub-Jay Recovery Plan, including management of habitats, protection of private lands, and encouragement of private landowners to maintain habitat (through the preservation and management of off-site habitat) (U.S. Fish and Wildlife Service 1990).

Each participating landowner will contribute funding sufficient to acquire and manage two acres of habitat for every one acre of habitat impacted. The amount of funding provided by each applicant will vary depending on the size of their property and the land valuation of property within each scrub-jay metapopulation. Landowners can calculate the amount of funding necessary to participate under this HCP/EA by following the steps below:

> Step 1: Multiply by two the size of the property for which incidental take authorization is requested. For example, a one-half acre lot would require contribution of funds to acquire one acre of scrub-jay habitat (0.5 X 2).
>
> Step 2: Determine which scrub-jay metapopulation the property lies in by reviewing maps provided in Appendix D. Multiply the product obtained in Step 1 by the dollar amount specified for the scrub-jay metapopulation in which the property is located (see Appendix D). If the property is not located within one of the 21 scrub-jay metapopulations listed in Appendix D, the applicant should multiply the product obtained in Step 1 by the average mitigation cost listed in Appendix D.

Applicants will be required to submit any required mitigation funds prior to issuance of the ITP.

Purchase Scrub-Jay Credits at a Service-Approved Conservation Bank

There are currently no approved conservation banks that offer sale of scrub-jay credits, but several prospective banks are in the process of developing banking agreements. In the event scrub-jay conservation banks become established during the term of this umbrella HCP/EA, landowners may choose to purchase credits available from Service-approved banks to satisfy their mitigation obligations under this HCP/EA. Only mitigation banks whose service areas include the property for which incidental take authorization is requested may be used to satisfy the mitigation requirements of this HCP/EA.

PLAN ADMINISTRATION

Service Field Offices in Vero Beach and Jacksonville will interact with potential eligible applicants to: (1) identify or verify lot owners with scrub-jay occurrence; (2) explain permitting options; (3) assist with application; and (4) advise landowners regarding implementation of their permit. The applicable Service Field Office will submit completed applications to the Service's Regional Office for review and issuance. The Regional Office will review applications for completeness and eligibility for this HCP/EA and will issue incidental take permits to qualified applicants. The Regional Office also will publish notices in the *Federal Register* on a quarterly basis listing the applications submitted and the permits issued under the umbrella in the preceding quarter.

The Service Field Offices will ensure that the applicants submit their mitigation fees to the Scrub-Jay Fund or purchase the required credits in an approved conservation bank. The Service Field Offices also will oversee the TNC agreement to ensure monies are used for the purposes and in the manner prescribed by the Scrub-Jay Fund Agreement. Implementation of mitigation at conservation banks will be monitored by the Service Field Office with lead for the service area of the conservation bank.

FUNDING

Mitigation funds must be received by TNC or conservation bank credits must be purchased before land clearing occurs on a permitted lot. To assure that the required mitigation funding is paid under the TNC option, the Regional Office HCP Coordinator will notify the appropriate Service Field Office upon permit signing by the Deputy Regional Director. The Service Field Office, in turn, will notify the permittee that the mitigation fee is due to TNC. TNC will then notify the appropriate Service Field Office who will confirm to the Regional Office HCP Coordinator when mitigation funds have been received. Once receipt is confirmed, the Regional Office HCP Coordinator will send the permit instrument to the permittee.

Under the conservation bank option, the Regional Office HCP Coordinator will notify the appropriate field office of permit signature, and the field office will then notify the

permittee that evidence of credit purchase is required to be sent to the field office. Upon receipt of the proof of credit purchase, the Regional Office HCP Coordinator will send the permit instrument to the permittee.

CHANGED AND UNFORESEEN CIRCUMSTANCES

Individual lot owners who receive incidental take authorization under this umbrella HCP/EA will receive "No Surprises" assurances as would any other incidental take permittee. It is expected that the activities authorized on individual lots under this HCP/EA will result in habitat unsuitable for scrub-jays. On-site conservation measures would not benefit the species, so neither this HCP/EA nor any associated ITP will require that a permittee implement on-site conservation. Consequently, individual permit holders under this HCP/EA will have no long-term obligations after they fulfill their mitigation requirements. We do not anticipate that any changed circumstances would require additional discussions with any permit holder who has met their mitigation requirements.

Changed and unforeseen circumstances may affect how (or if) the Service continues to administer this umbrella HCP/EA. Possible changed circumstances might include the listing of other species in the Plan Area while this HCP/EA is in effect. It is also possible that some rangewide, catastrophic event, such as an irruption of West Nile virus, flooding, or devastating tropical storms may have significant rangewide effects on scrub-jay conservation. Revisions to the Scrub-Jay Fund Agreement would also be considered a changed circumstance.

There may be unforeseen circumstances that may have widespread, negative effects on the scrub-jay. Unforeseen circumstances could also include legislative, executive, or judicially-directed changes in the Service's legal authority to implement this umbrella HCP/EA.

If any changed or unforeseen circumstances are discovered or identified by either Field Office or the Regional Office, that office will convene joint discussions with the others to evaluate effects of the changed or unforeseen circumstance and to plan an appropriate response. Based on the conclusions of these discussions, possible responses would be to continue implementation as provided in this HCP/EA, to amend this HCP/EA, or to terminate use of this HCP/EA. We anticipate that it would be appropriate to suspend issuance of individual lot owner permits while such an amendment is considered. All amendments will be evaluated in accordance with 50 CFR 13.23 and 17.32. Decisions to suspend or terminate implementation of this HCP/EA will be made by the Southeast Region, Ecological Services, Planning and Permitting Chief. Changed circumstances will also be considered in deciding whether this umbrella HCP/EA should be renewed after expiration.

MONITORING AND REPORTING

Service Field Offices will maintain a database of applicants and issued permits for their work areas. These will be submitted quarterly for the regular post-issuance public notice described above.

As the organization approved to receive mitigation funds, TNC will provide the Service Field Offices with an annual report that includes the total amount of funds received for mitigation purposes, a GIS database of properties acquired with mitigation funds, the number of acres acquired, the number of acres of scrub acquired, the priority assigned to the purchased property, and the amount paid for each mitigation property.

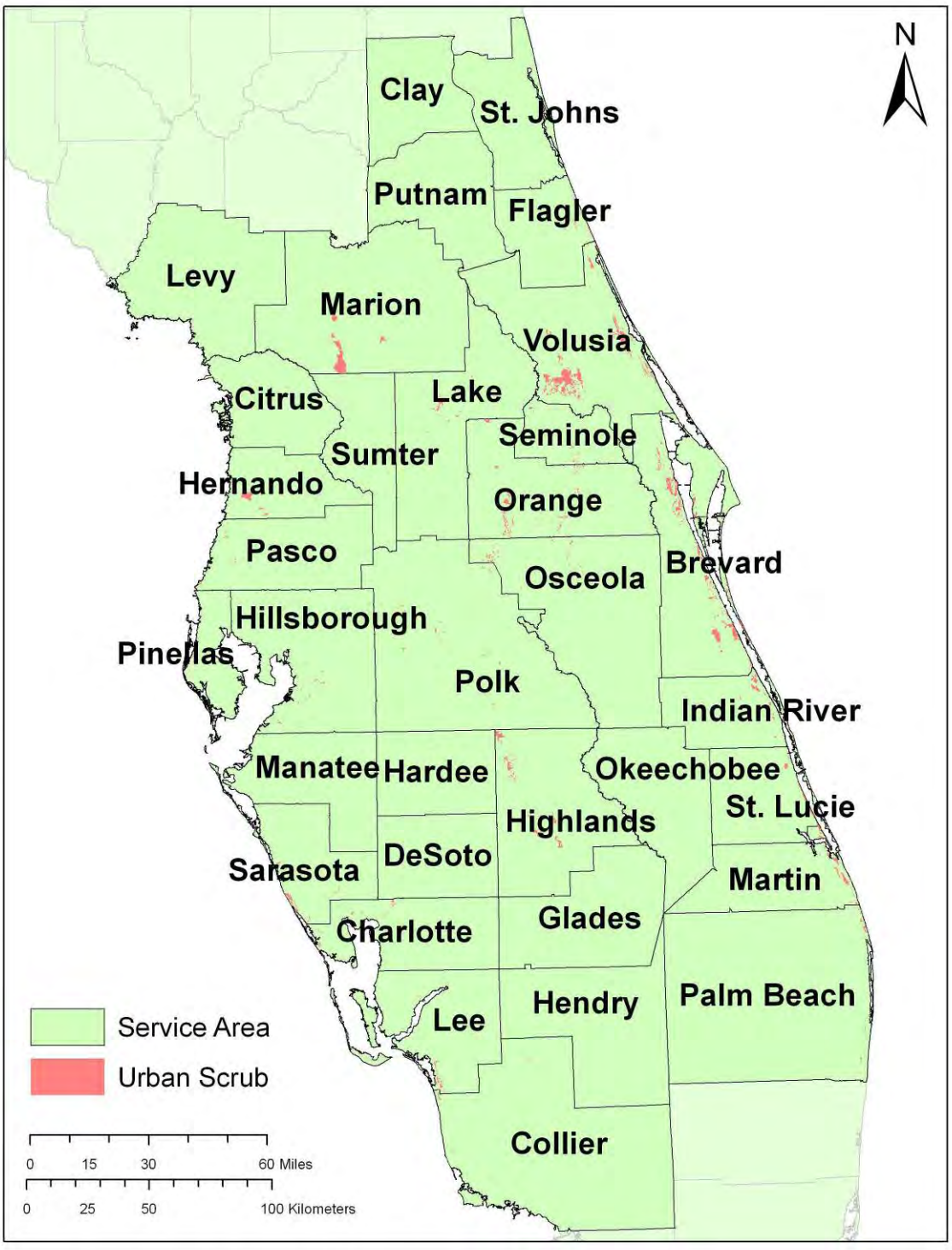
TNC will likely eventually relinquish mitigation properties to third parties along with endowment monies for management in perpetuity. These transfers will be conditioned to require management to improve and maintain scrub-jay habitat, monitoring of the status of the property and scrub-jays, and reporting on management actions and results. Third-party transferees will provide a monitoring report on the status of the property every five years or upon completion of a restoration activity (e.g., number of acres burned, etc.). Scrub-jay surveys will be conducted and reported on every five years as per the Service's approved scrub-jay survey protocol. The report should contain information regarding the number of acres acquired by the third-party transferee for management, the number of acres of scrub acquired for management, and whether or not the management of the property is being integrated with management of existing conservation lands or being managed separately.

Table 1. List of Florida counties that are covered by the Umbrella HCP/EA, web addresses to the county comprehensive plans, and whether a county has less than 30 scrub-jay pairs remaining.

County	Less than 30 jay groups	Comprehensive Plan Web Address*
Brevard	No	http://www.brevardcounty.us/zoning/p-compplan6.cfm
Charlotte	No	http://www.charlottecountyfl.com/ComprehensivePlan/
Citrus	Yes	http://www.bocc.citrus.fl.us/commdev/comp_plan/comp_plan_menu htm
Clay	Yes	http://www.claycountygov.com/Planning/Comprehensive_Plan/comprehensive_plan.htm
Collier	Yes	http://www.colliergov.net/compplanning/gmp/index.htm
Desoto	Yes	http://www.desotoms.com/planning_ordinances.htm
Flagler	Yes	http://www flaglercounty.org/departments/planning/compplan.htm
Glades	No	http://www.gladescofl.us
Hardee	Yes	http://www.hardeecounty.net/
Hendry	Yes	http://www hendryclerk.org/index html
Hernando	Yes	http://www.co hernando fl.us/plan/PlanningCompPlan.htm
Highlands	No	http://highlands-county.com/
Hillsborough	Yes	http://www hillsboroughcounty.org/
Indian River	No	http://www.ircgov.com/Departments/Community_Development/Planning_Division/CP/Index.htm
Lake	No	http://www.lakegovernment.com/departments/growth_management/comprehensive_planning//index.aspx
Lee	Yes	http://www.lee-county.com/dcd1
Levy	Yes	http://www.levycounty.org/html/body_comprehensive_plan.html
Manatee	No	http://www.co manatee fl.us/
Marion	No	http://www marioncountyfl.org/PL271/PL_Comp_Plan htm
Martin	No	http://www martin fl.us/GOVT/depts/gmd/mccp/complanreal.htm
Okeechobee	Yes	http://www.co.okeechobee fl.us/
Orange	Yes	http://www.orangecountyfl.net/cms/DEPT/growth/planning/programs/comprehensive/publications htm
Osceola	Yes	http://www.osceola.org/index.cfm?lsFuses=department/Zoning/815
Palm Beach	Yes	http://www.co.palm-beach.fl.us/pzb/Planning/comprehensiveplan/tableofcontent.htm
Pasco	Yes	http://www.pascocountyfl net/devser/gm/complan/cpindex.htm
Pinellas	Yes	http://www.pinellascounty.org/Plan/compplanguide htm
Polk	No	http://www.polk-county net/county_offices/planning/plan.aspx
Putnam	Yes	http://www.putnam-fl.com/brd/Board_htmls/P&D/planning_page.htm
Sarasota	No	http://www.scgov net
Seminole	Yes	http://www.seminolecountyfl.gov/pd/planning/compplan.asp
St. Johns	Yes	http://www.co.st-johns.fl.us/BCC/growth_mgmt_services/planning/index.aspx
St. Lucie	Yes	http://www.stluciecd.org/Publications_%20Applications.asp
Sumter	Yes	http://sumtercountyfl.gov/plandevelop/planning/compplan.htm
Volusia	No	http://65.77.232.5/onestop/compplan htm

*for general county web sites search "Comprehensive Plan"

Figure 1. Service area covered by Florida scrub-jay HCP/EA.



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Appendix A

Certificate of Intent to Participate in the Florida Scrub-Jay Umbrella Habitat Conservation Plan

I, _____ (applicant's name) have read and understand that by signing below I am agreeing to accept the terms and conditions of the Florida Scrub-Jay Umbrella Habitat Conservation Plan (HCP/EA) and to abide by the conditions of the Federal incidental take permit issued in response to my application to the U.S. Fish and Wildlife Service.

By incorporating the HCP/EA as part of my incidental take permit application, I agree to implement the minimization and mitigation measures of the HCP/EA and contribute $_____ to mitigate for the take of the threatened Florida scrub-jay resulting from the loss of _____ acre of occupied habitat.

I have sufficient authority or rights over the property for which I am requesting incidental take authorization to implement the measures of the umbrella HCP/EA, including, but not limited to, the ability to control the timing of land-clearing and other activities that will result in take of scrub-jays.

I understand that the Federal incidental take permit issued in response to this application will be valid for a period of one year from the effective date. I do not intend or expect to transfer the permit to any other person or entity.

The property for which I am requesting incidental take authorization is individually identified as follows (complete separate copies of this form if you are requesting take authorization for multiple properties):

Parcel/Plat Number (required): _____

Township/Range/Section (if known): Township___ S, Range ___ E, Section _____

County (Required): _____

Physical Address (if available): _____(Street)

_____(Suite, etc.)

_____(City, State, Zip)

Attach plat map if available

_____ _____
(signed name of applicant) (daytime telephone number)

_____ _____
(printed name of applicant) (email address if available)

_____
(date)

Appendix B

Instructions for Participating in the Florida Scrub-Jay Umbrella HCP/EA

1. Review the Florida Scrub-Jay Umbrella Habitat Conservation Plan (HCP/EA) and determine whether your property meets the eligibility criteria found on pages 3 and 4. The HCP/EA is available from either of the Service Field Offices named below, or can be downloaded from the web at: http://www.fws.gov/northflorida/Scrub-Jays/scrubjays.htm. Representatives of those offices will assist you in determining your eligibility.

2. Determine mitigation cost. The section on "*Conservation Fund Contribution*" (page 28) and Appendix C of the HCP/EA provide a step-by-step procedure on how to determine mitigation costs.

3. If you are eligible to participate, complete incidental take permit application form 3-200-56. Form 3-200-56 can be found on the web at: *http://www.fws.gov/forms/3-200-56.pdf.*

4. Provide a $50.00 check made payable to "U.S. Fish and Wildlife Service." This is an application-processing fee.

5. Complete "Certificate of Intent to Participate in the Florida Scrub-Jay Umbrella Habitat Conservation Plan" form found in Appendix A of the HCP/EA.

6. Mail the completed incidental take permit application, Certificate of Intent to Participate in the Florida Scrub-jay Umbrella Habitat Conservation Plan, and $50.00 check to one of the following addresses:

   If the property for which this HCP/EA is intended is located in Brevard, Citrus, Clay, Flagler, Hernando, Hillsborough, Lake, Levy, Manatee, Marion, Orange, Pasco, Pinellas, Putnam, Seminole, St. Johns, Sumter, or Volusia Counties mail to:

   U.S. Fish & Wildlife Service
   North Florida Field Office
   7915 Baymeadows Way, Suite 200
   Jacksonville, Florida 32256-7517

   OR:

   If the property for which this HCP/EA is intended is located in Charlotte, Collier, DeSoto, Glades, Hardee, Hendry, Highlands, Indian River, Lee, Martin,

Okeechobee, Osceola, Palm Beach, Polk, Sarasota, and St. Lucie Counties mail to:

U.S. Fish & Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, Florida 32960
ATTN: FSJ Umbrella HCP/EA

7. Upon receipt of your completed incidental take permit application and Certificate of Intent to Participate in the Florida Scrub-jay Umbrella Habitat Conservation Plan and $50.00 application check, we will assess your application and confirm that you are eligible to participate. We will notify you of our findings and provide you a permit number, if we determine that you are eligible. Once you receive a permit number, you must submit the mitigation payment calculated above by check or money order to:

The Nature Conservancy
Attn: Eppie Bang
222 S. Westmonte Drive, Suite 300
Altamonte Springs, FL 32714

Please include the words "Mitigation Deposit" and the permit number provided by the Service on the check to insure proper processing.

8. The Service will mail your incidental take permit to you by overnight mail once we have confirmed that your mitigation payment has been received.

Appendix C

Florida Scrub-Jay Conservation Program Fund

Memorandum of Understanding
between
U.S. Fish and Wildlife Service
and
The Nature Conservancy

Appendix D

Calculating Mitigation Costs

This Appendix must be used to determine the cost of mitigation that will be required to participate in this HCP/EA. There are 21 maps that follow and applicants should review them to determine which scrub-jay metapopulation their property lies in. Once an applicant has identified the metapopulation containing their property, they should use the list below to find the cost of mitigation. If a property is not located within any of the 21 metapopulations, the applicant should use the "Average" value listed at the end of the table below.

How to calculate the mitigation cost for participation in the Scrub-jay Umbrella HCP.

Step 1. Determine your property size in acres.

You can find your property size on the land title survey or at your county's property appraiser's web site.
If the size of your property is recorded in square feet (sq. ft.), divide by 43,560 to obtain acres.

Step 2. Determine the mitigation area.

Multiple your property size in acres by 2. For example, if your property size is 0.23 acre, multiplying by 2 would result in 0.46 acres of mitigation area.

Step 3. Find the scrub-jay metapopulation where your property is located.

Use the overview map to identify the general area of the State where your property is located. Go to the close-up maps of the metapopulations found after the overview map for greater detail.

Step 4. Calculate Mitigation Cost.

Find your metapopulation in the listing provided in Appendix Table D.1. If your property is outside the identified metapopulations use the Average Total Mitigation Cost from the last line of the Appendix Table D.1. Multiply the mitigation area obtained in step 2 by the cost within your metapopulation.

This is the mitigation cost needed to compensate for impacts to scrub-jays and participate in the umbrella HCP.

You can pay the mitigation cost by:

1) contributing to the Florida Scrub-jay Conservation Fund (see Appendix B for details), or

2) purchasing an equivalent amount of mitigation credit at a Service-approved conservation bank (please check our web site www.fws.gov/northflorida/Scrub-jays/scrubjays.htm to see if there are Service approved banks in your area).

Table D.1. Mitigation cost per acre by Scrub-jay Metapopulation for the Florida Scrub-jay Umbrella Habitat Conservation Plan, revised **September 2014**.

Scrub-jay Metapopulation	Per Acre Total Mitigation Cost
Central Brevard	$44,074
Central Charlotte	$19,893
Central Lake	$29,961
Citrus	$12,295
Flagler	$29,961
Lake Wales Ridge	$14,770
Lee	$38,718
Levy	$7,580
Manatee	$13,450
Martin	$37,359
Merritt Island	$29,961
Ocala National Forest	$29,961
Palm Beach	$29,961
Pasco	$19,903
North Brevard	$14,294
Northeast Lake	$27,659
Northwest Charlotte	$38,637
Sarasota	$71,360
South Brevard	$28,680
St. Lucie	$53,833
West Volusia	$15,327
Average	$29,961

Figure D.l. All Florida scrub-jay metapopulations.

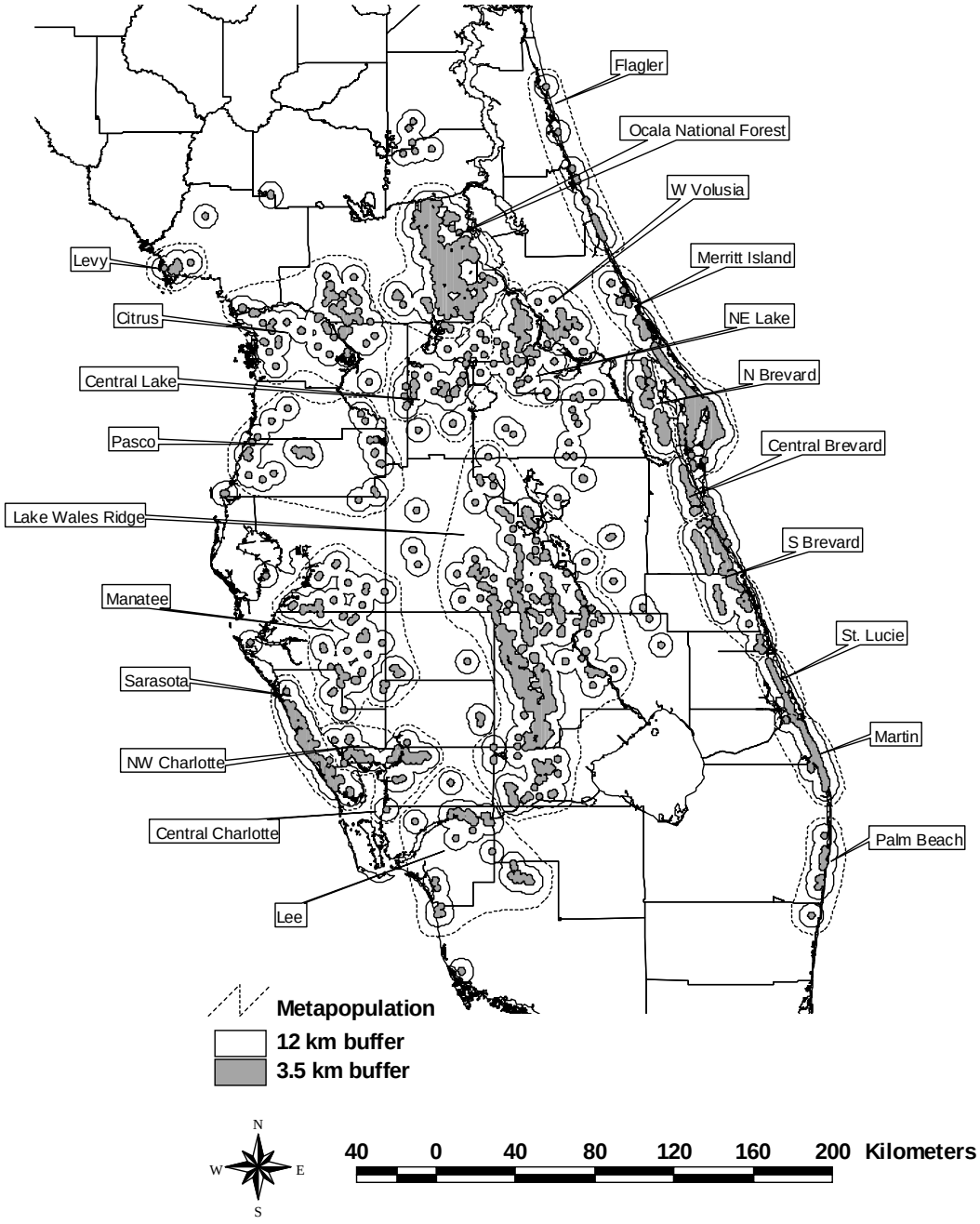
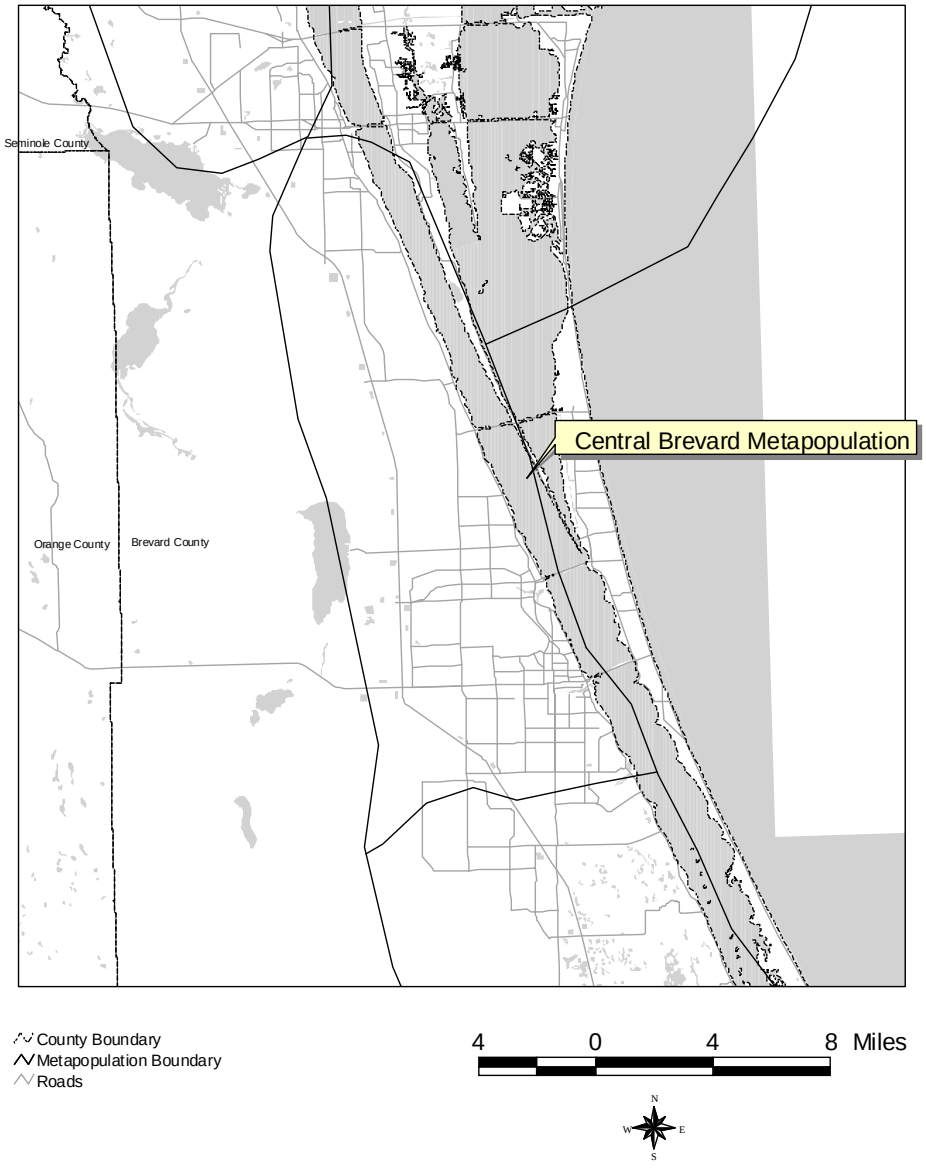
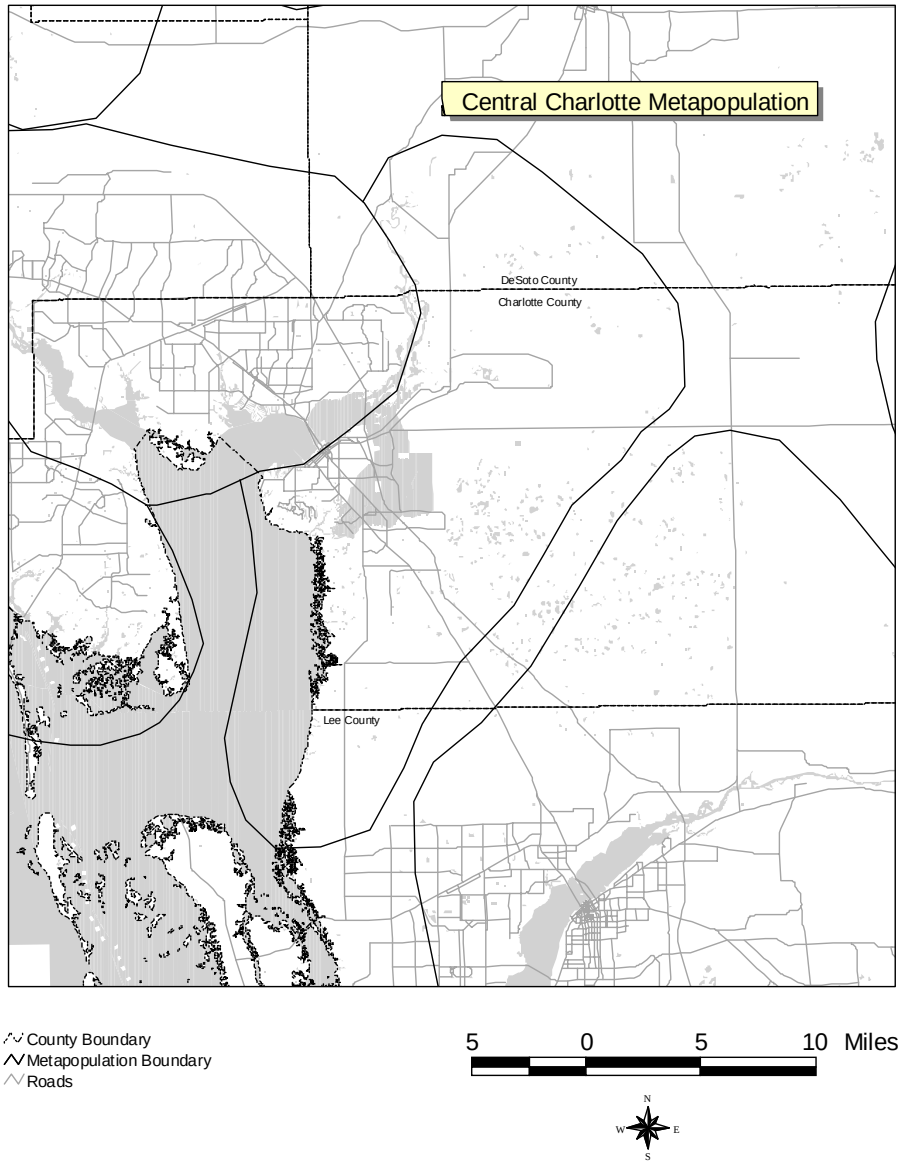


Figure D.2. Central Brevard Metapopulation.



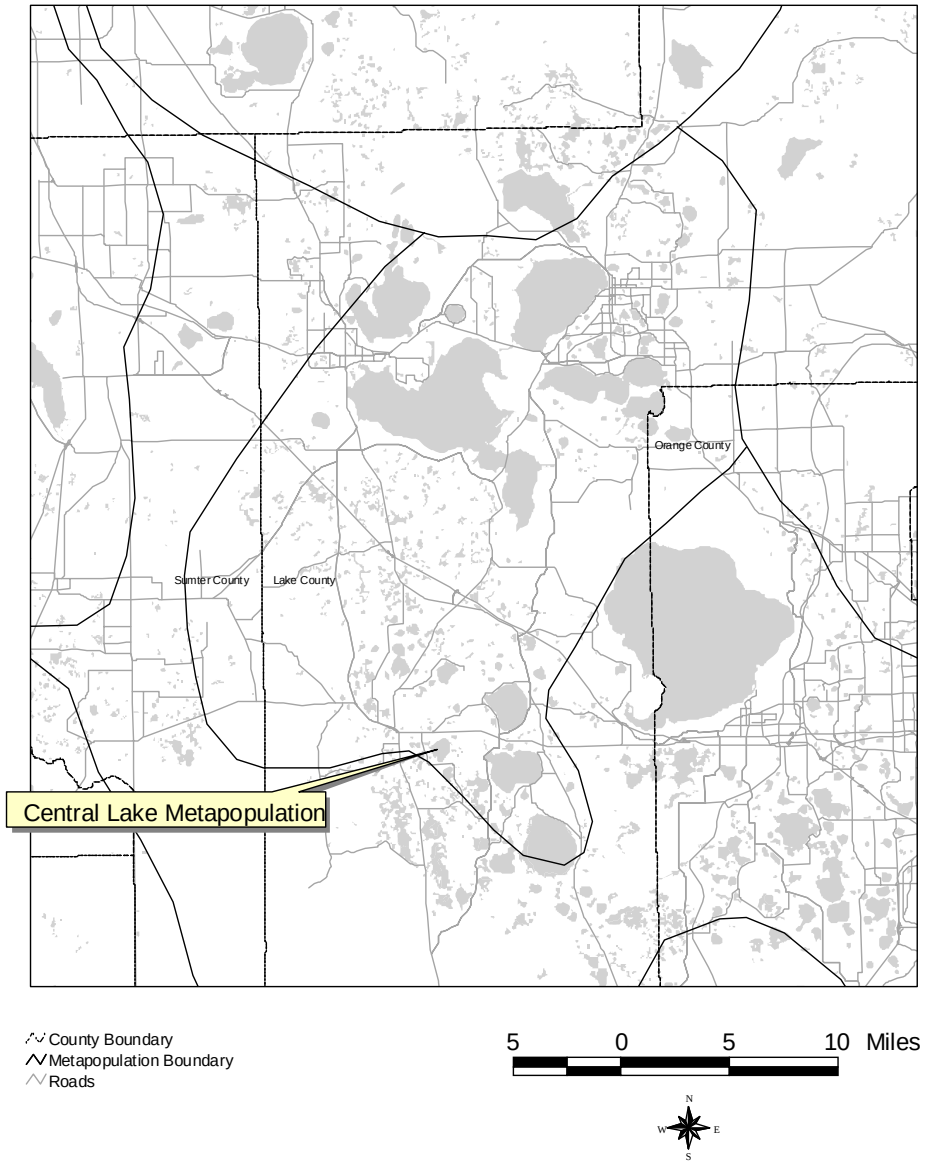
Central Brevard Metapopulation

Figure D.3. Central Charlotte metapopulation.



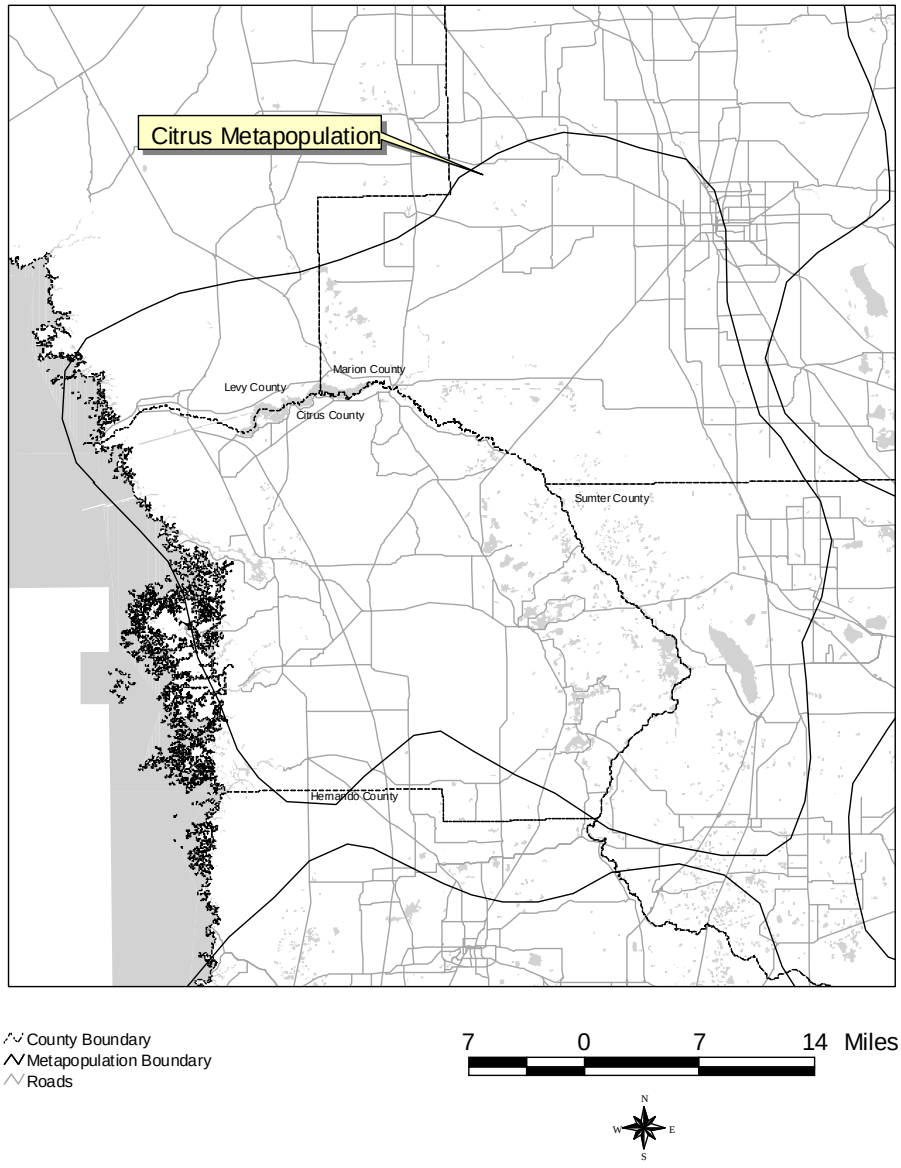
Central Charlotte Metapopulation

Figure D.4. Central Lake metapopulation.



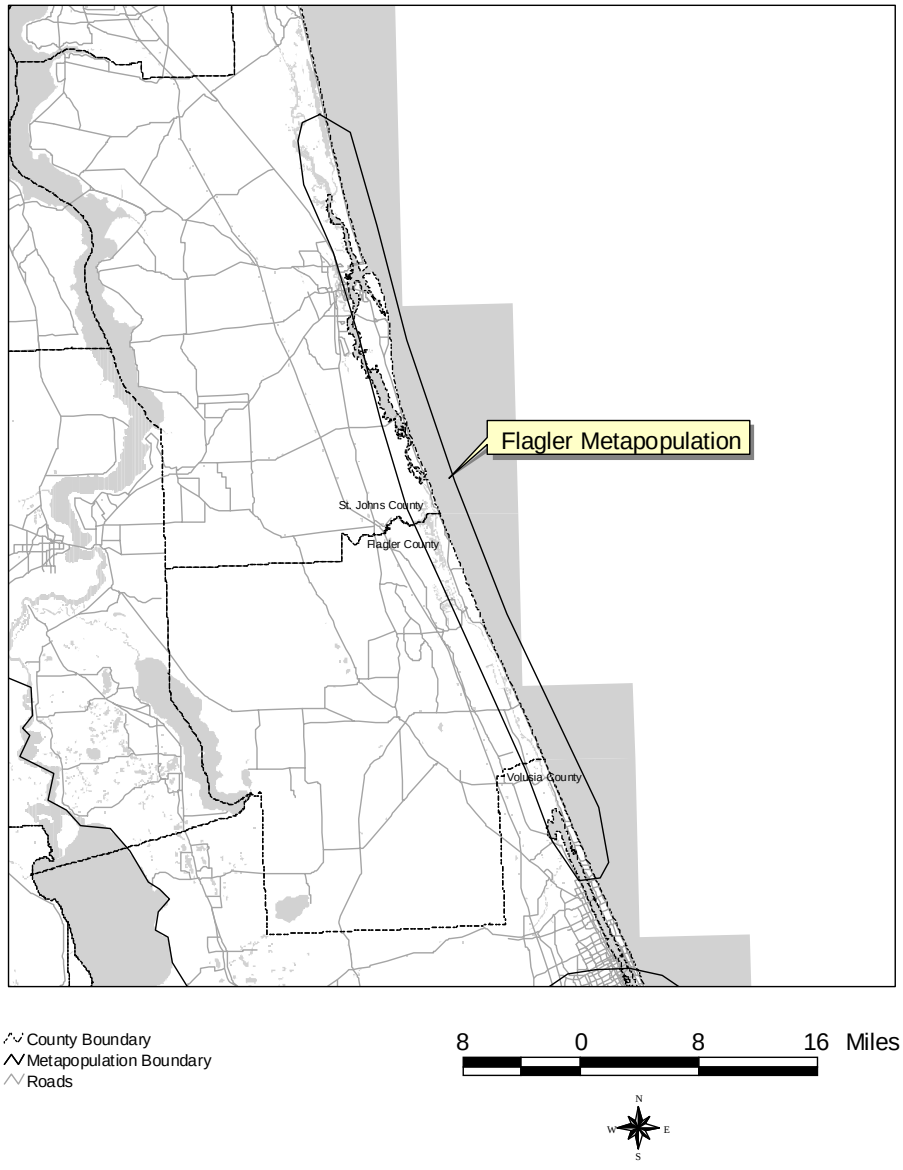
Central Lake Metapopulation

Figure D.5. Citrus metapopulation.



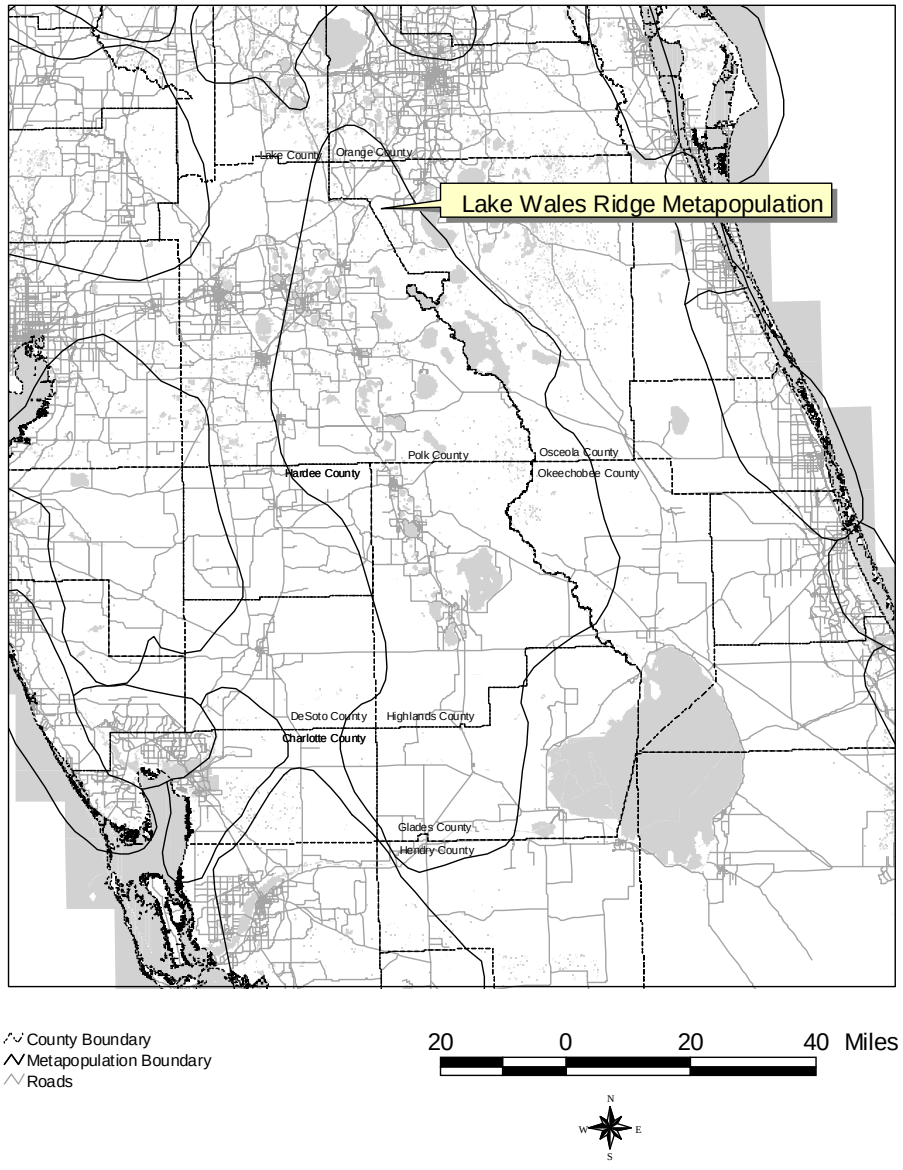
Citrus Metapopulation

Figure D.6. Flagler metapopulation.



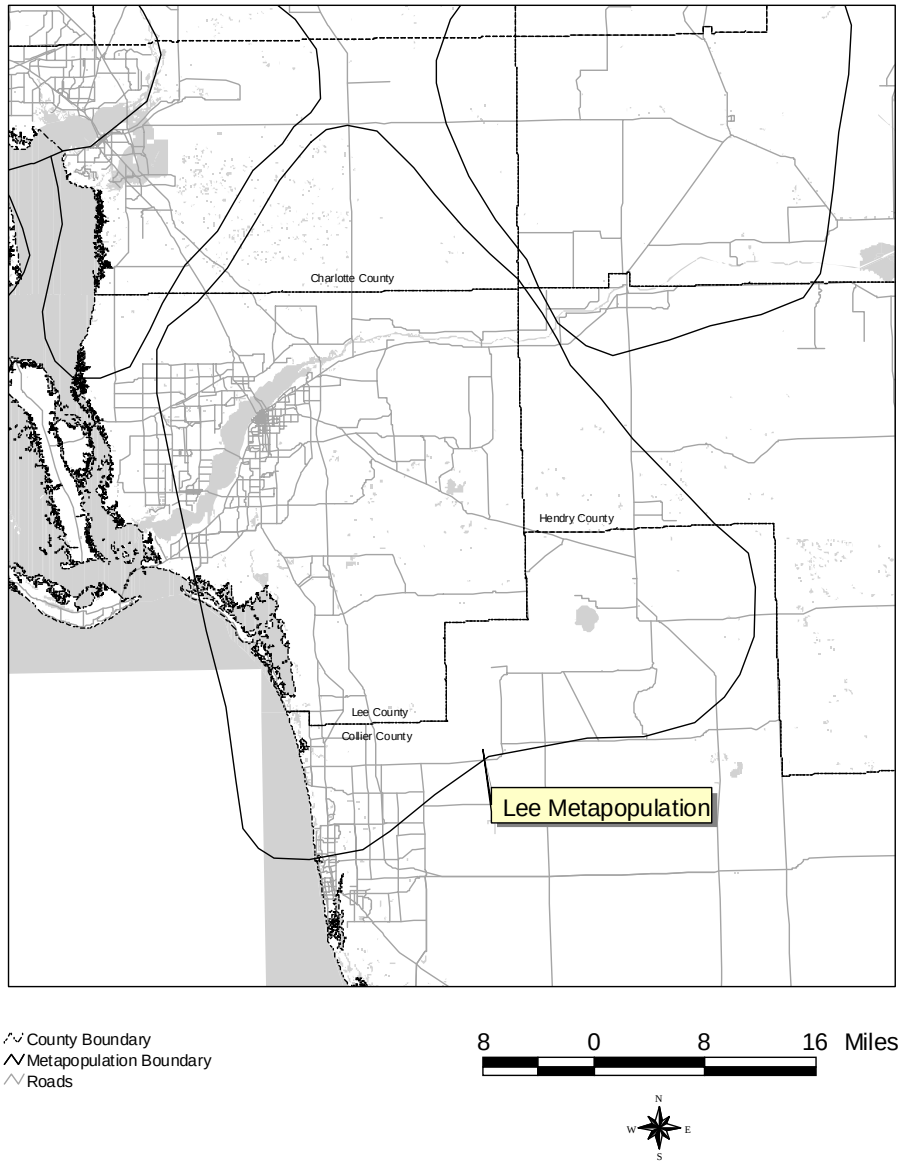
Flagler Metapopulation

Figure D.7. Lake Wales Ridge metapopulation.



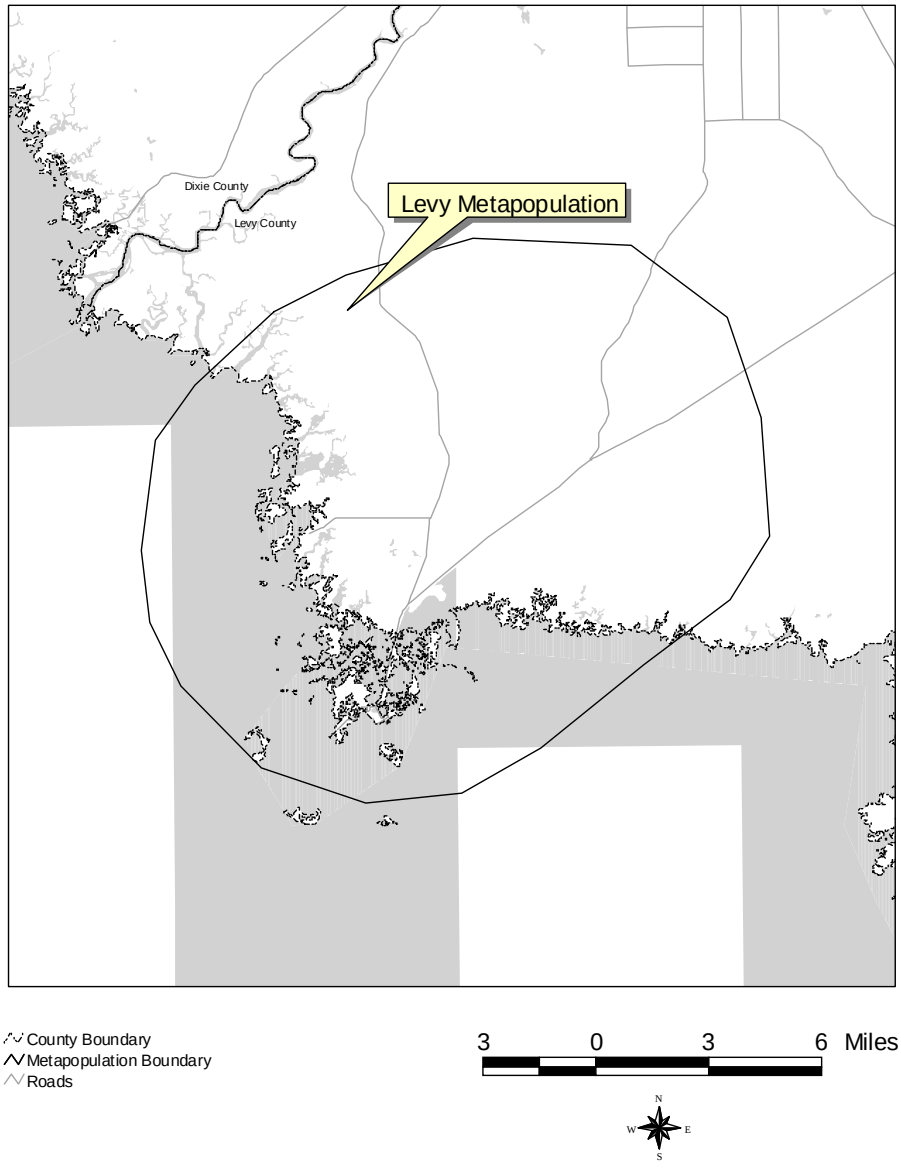
Lake Wales Ridge Metapopulation

Figure D.8. Lee metapopulation.



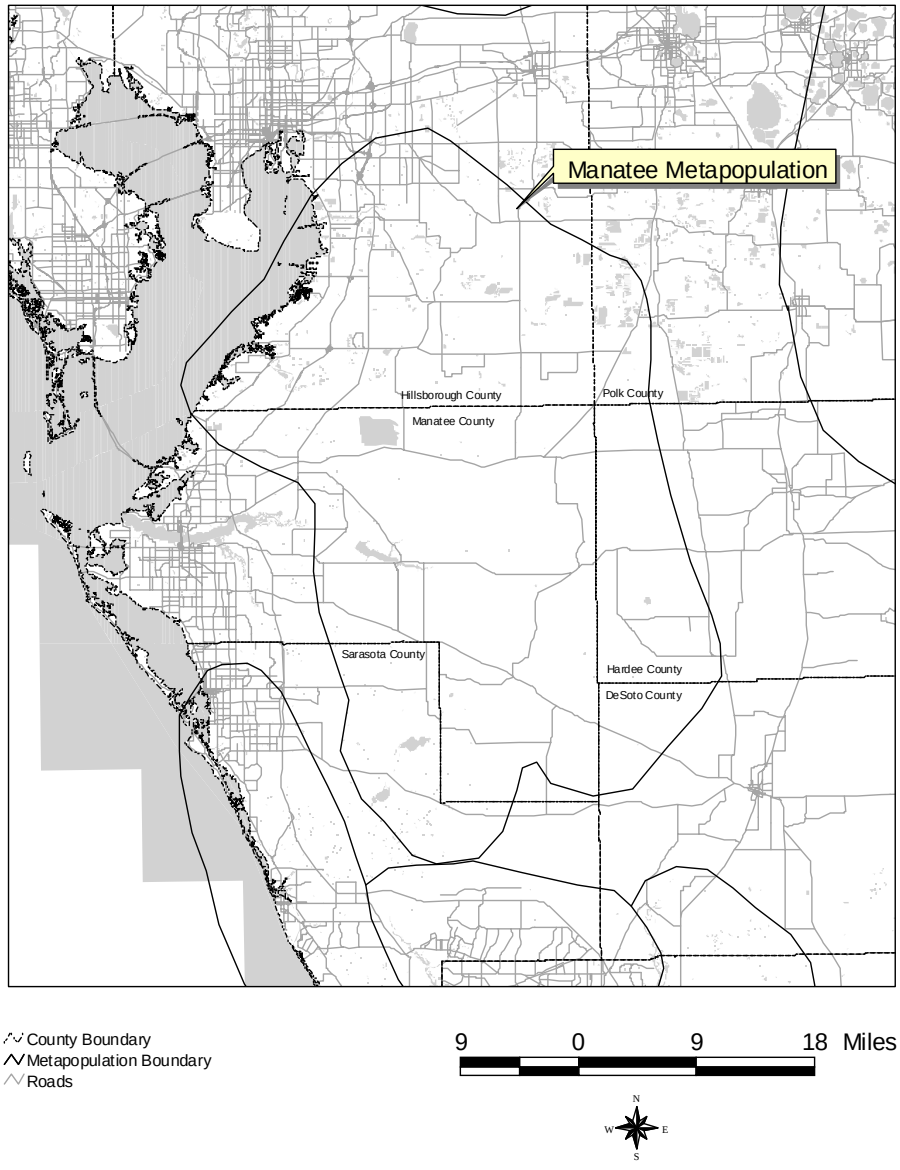
Lee Metapopulation

Figure D.9. Levy metapopulation.



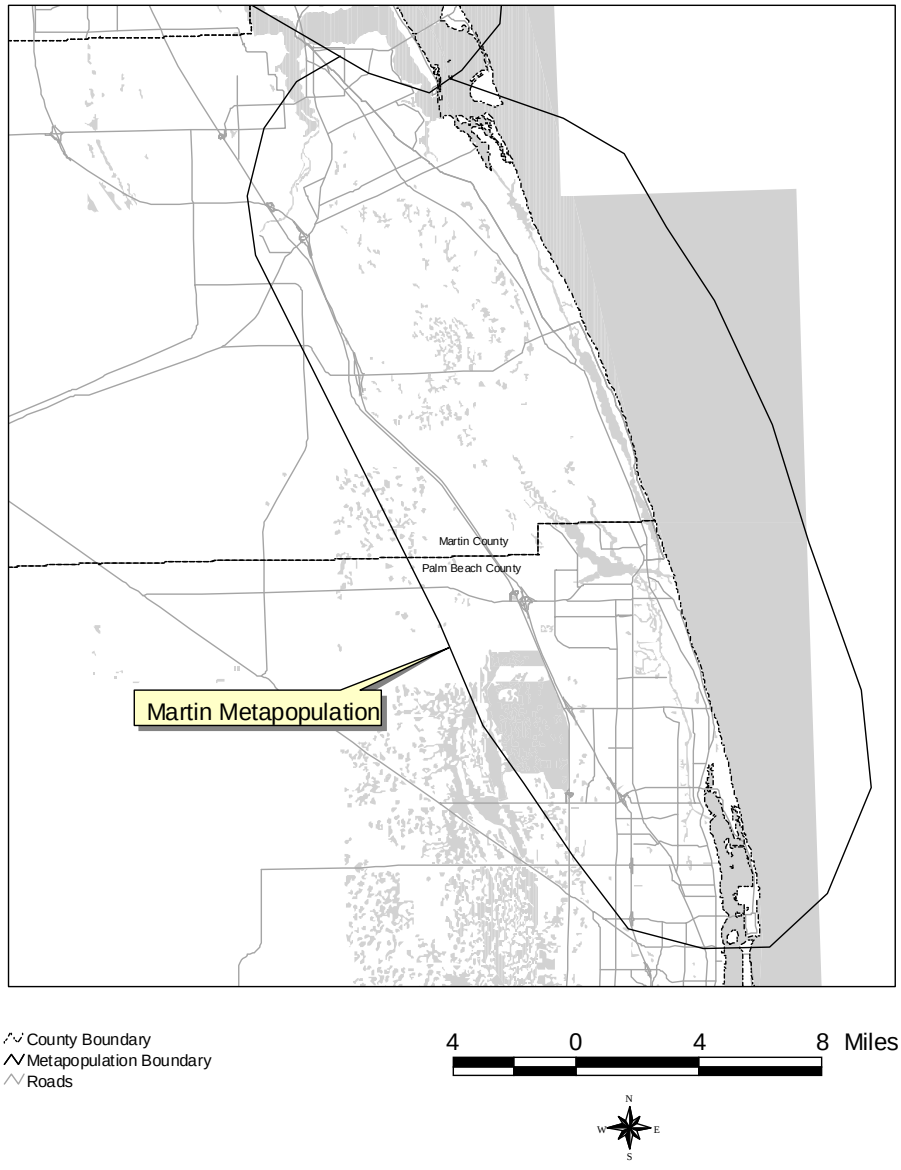
Levy Metapopulation

Figure D.10. Manatee metapopulation.



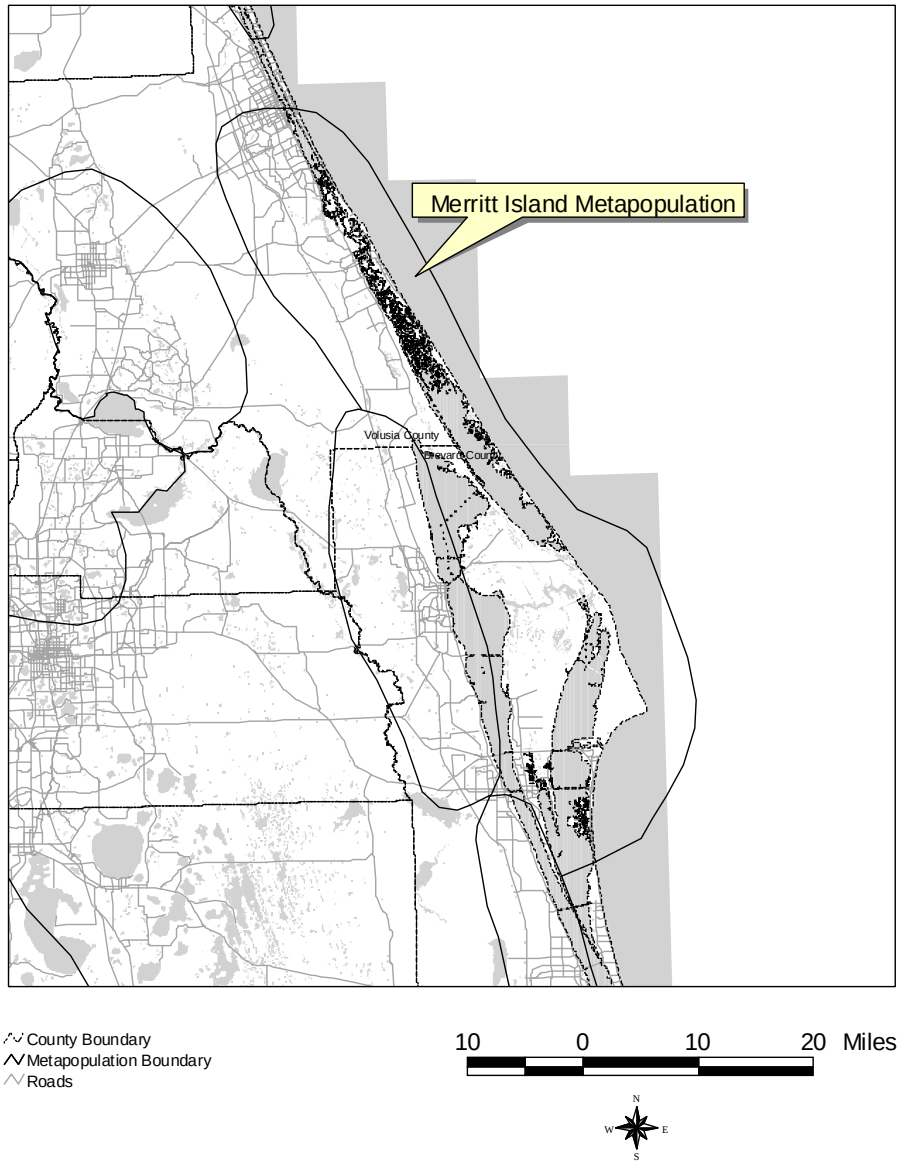
Manatee Metapopulation

Figure D.11. Martin metapopulation.



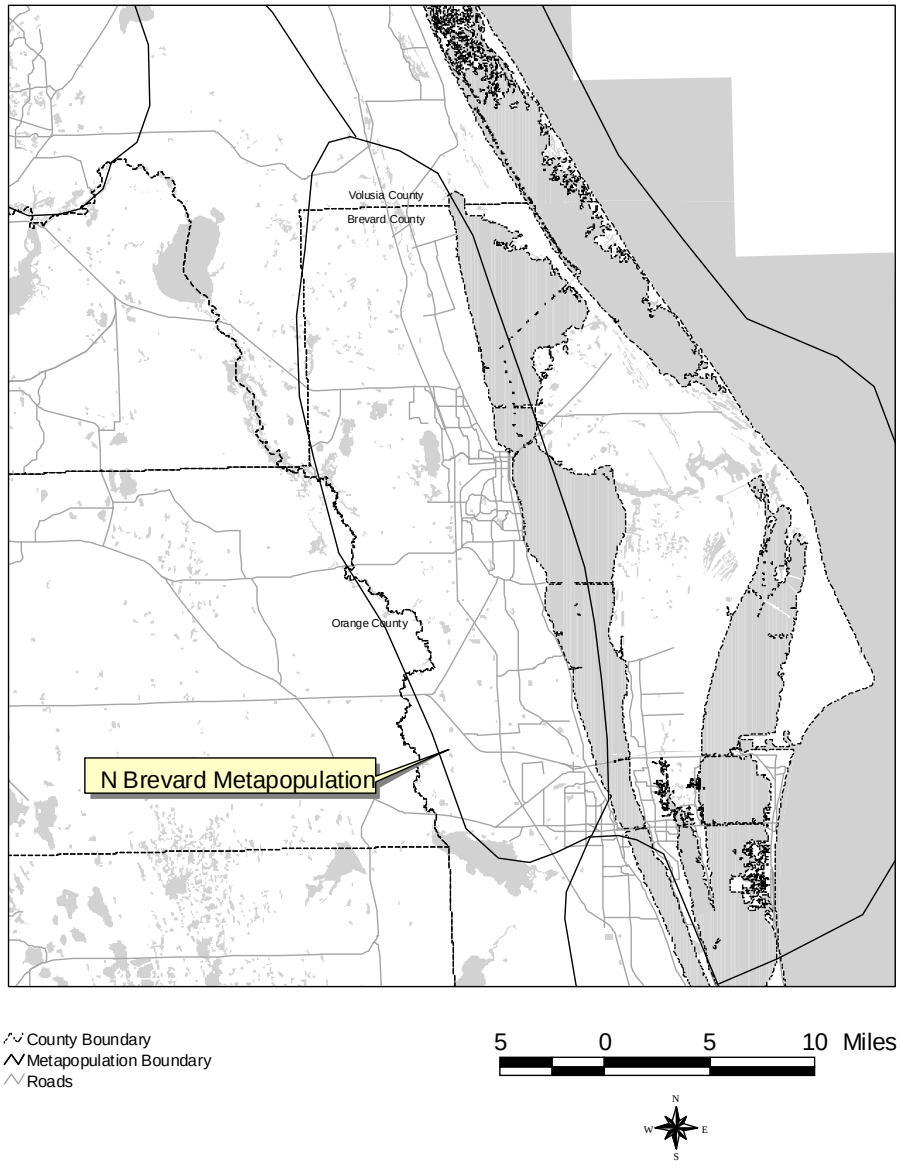
Martin Metapopulation

Figure D.12. Merritt Island metapopulation.



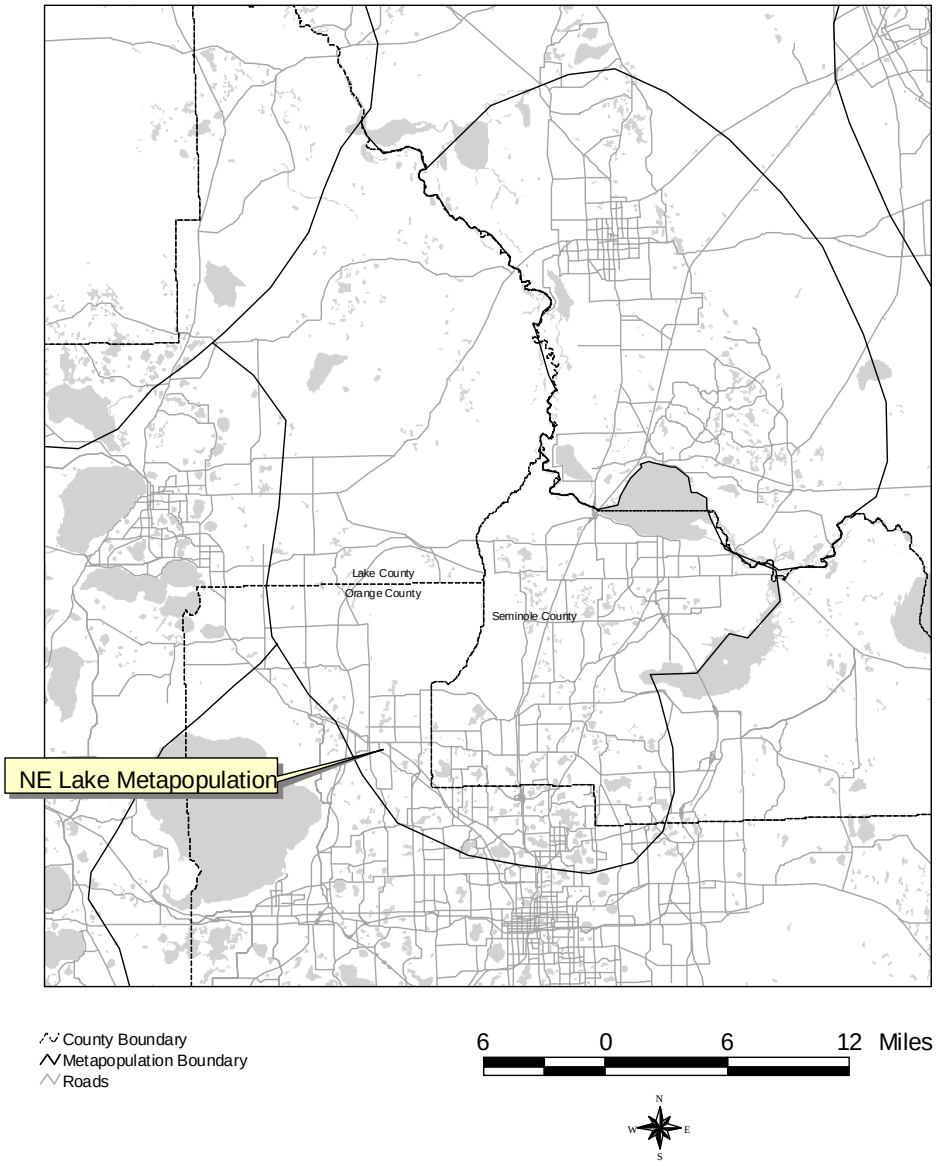
Merritt Island Metapopulation

Figure D.13. North Brevard metapopulation.



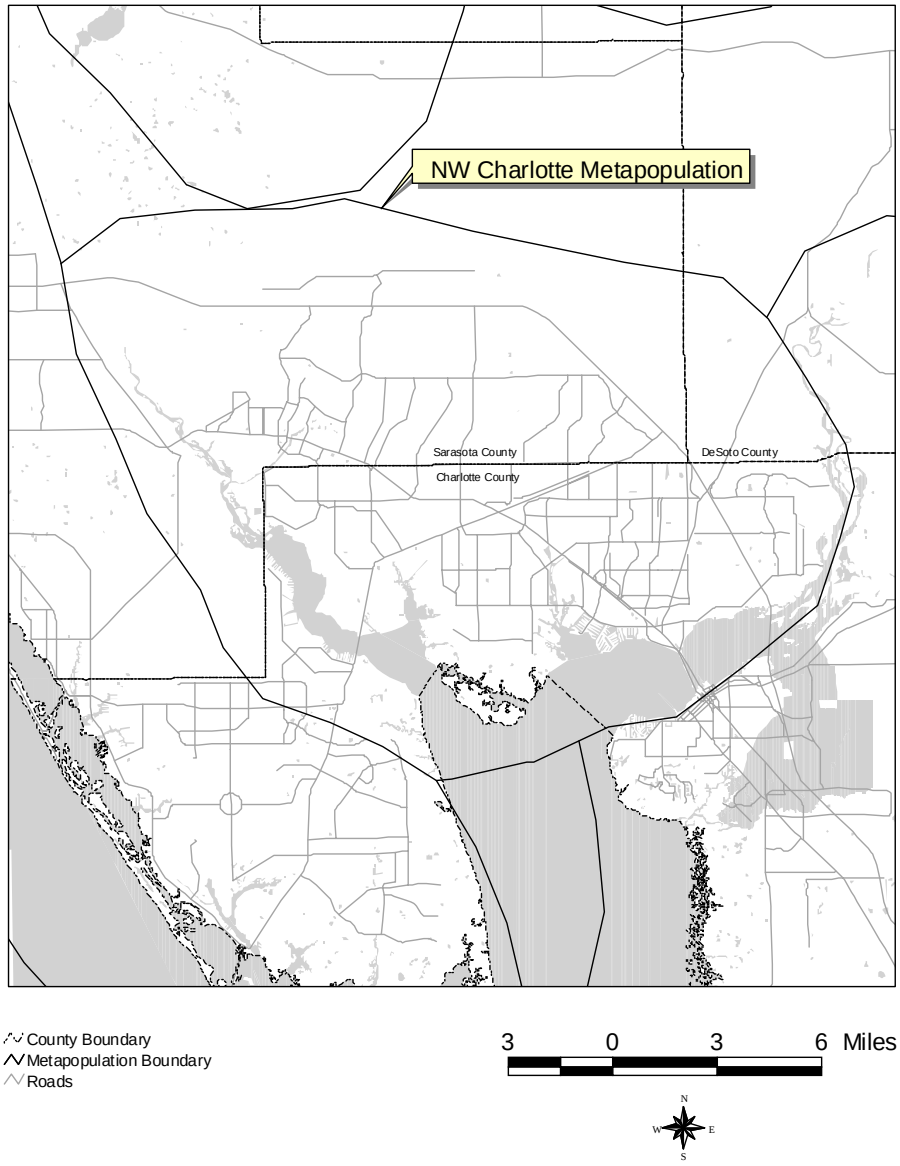
N Brevard Metapopulation

Figure D.14. Northeast Lake metapopulation.



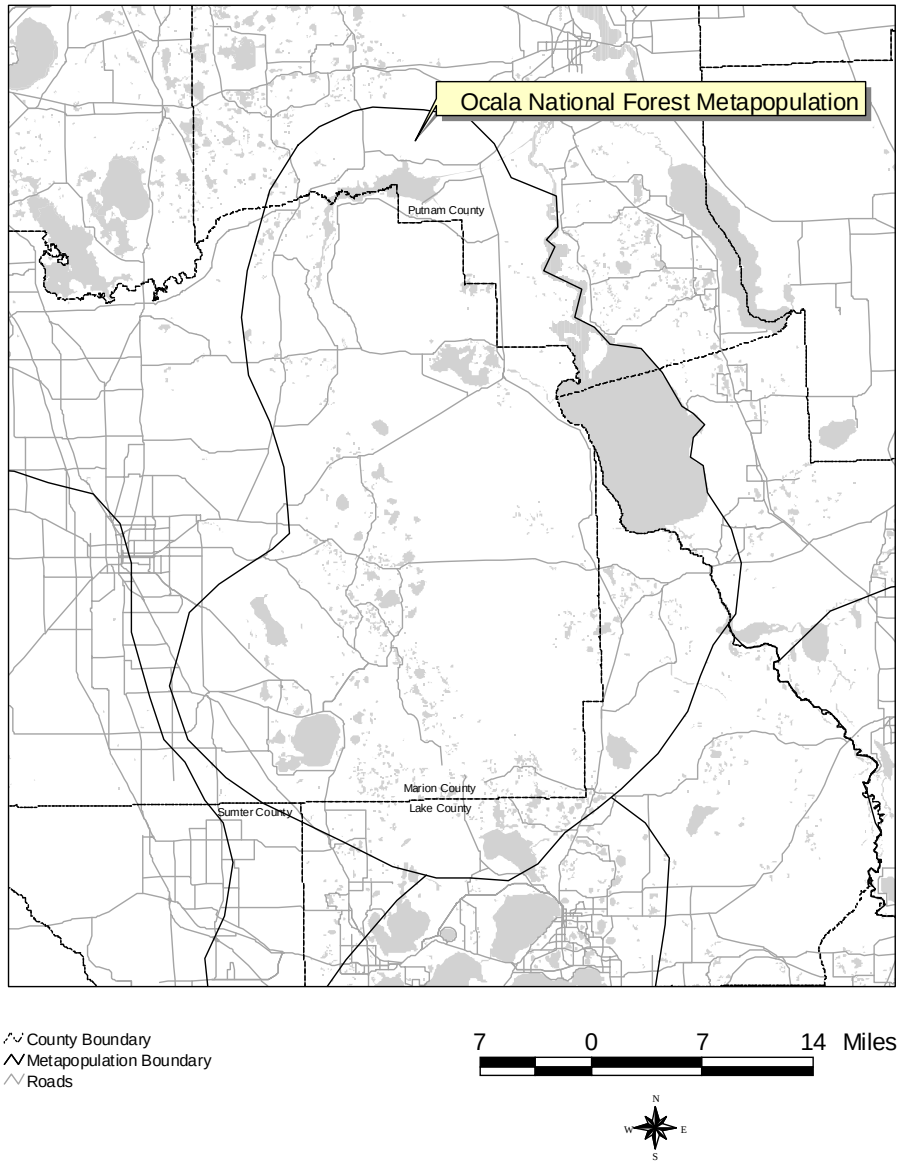
NE Lake Metapopulation

Figure D.15. Northwest Charlotte metapopulation.



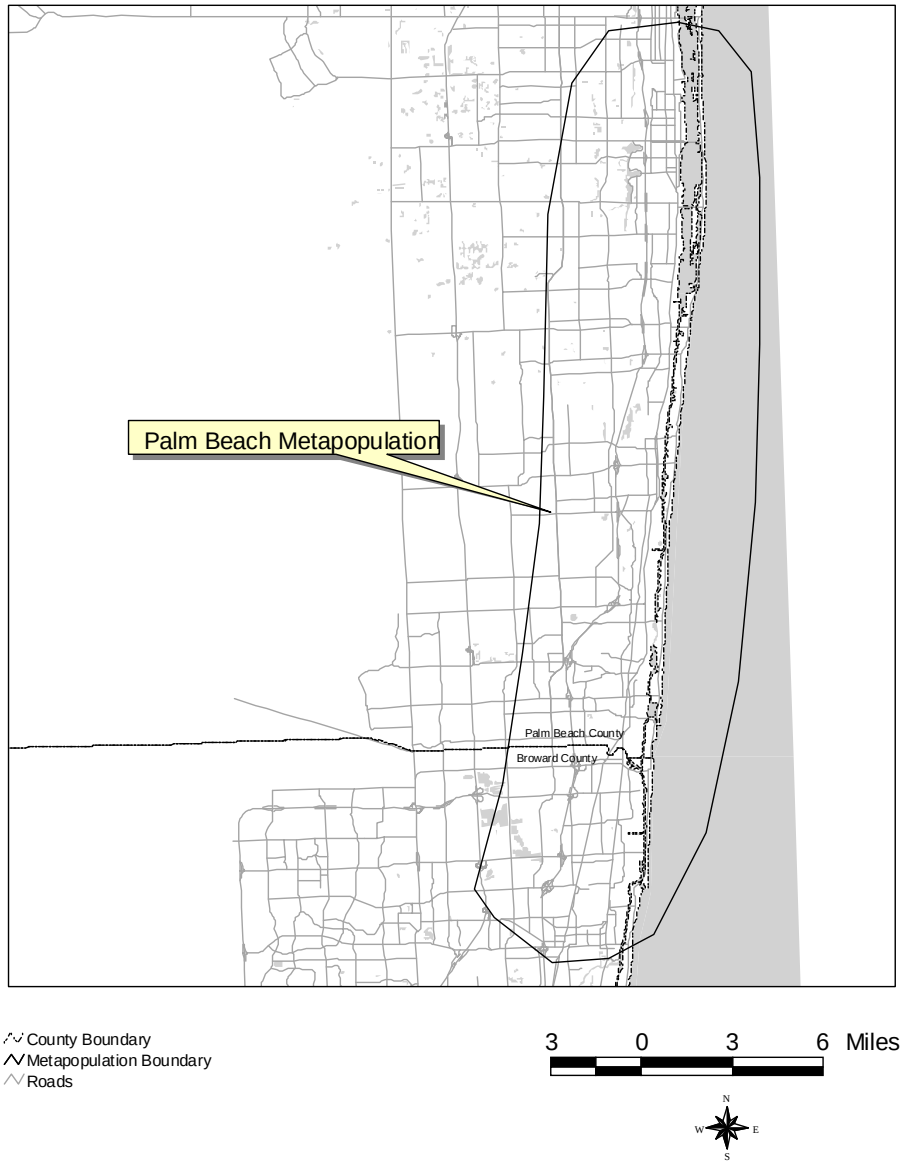
NW Charlotte Metapopulation

Figure D.16. Ocala National Forest metapopulation.



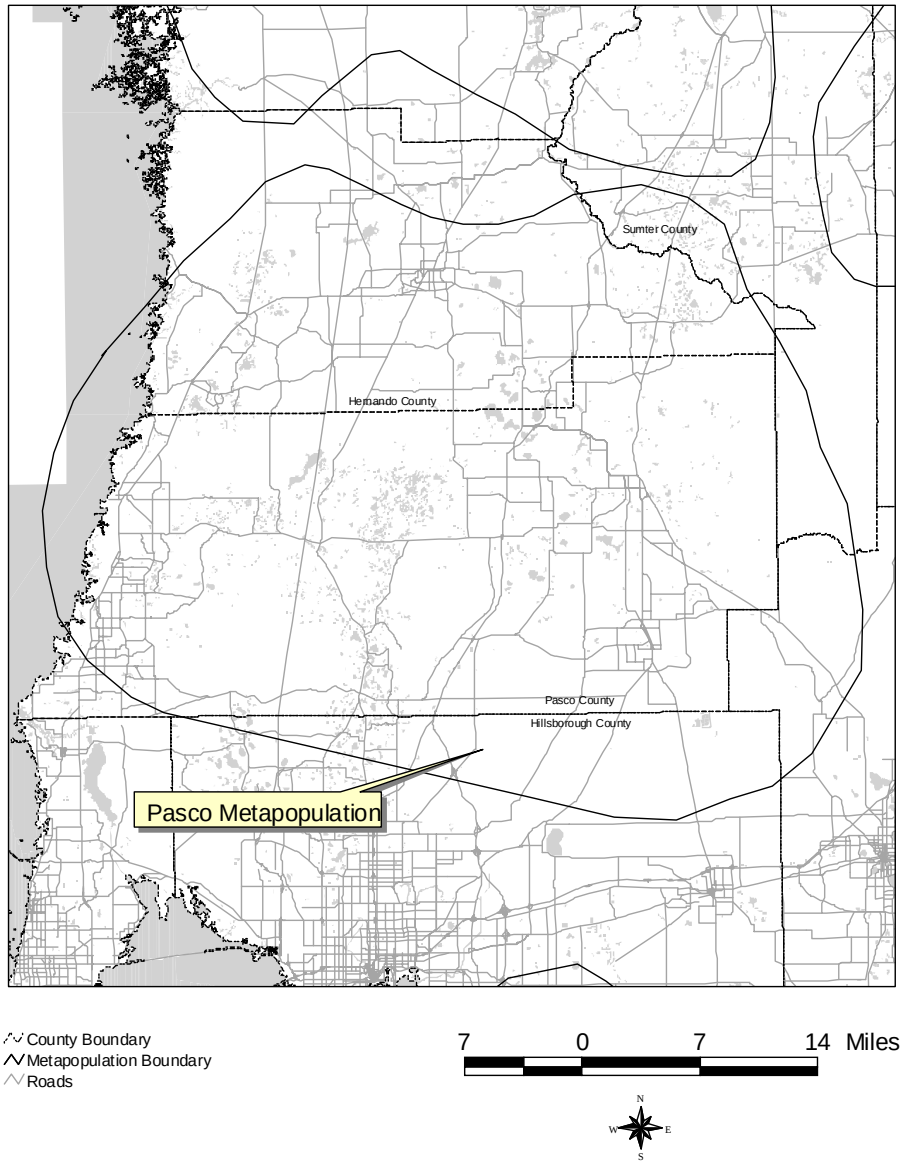
Ocala National Forest Metapopulation

Figure D.17. Palm Beach metapopulation.



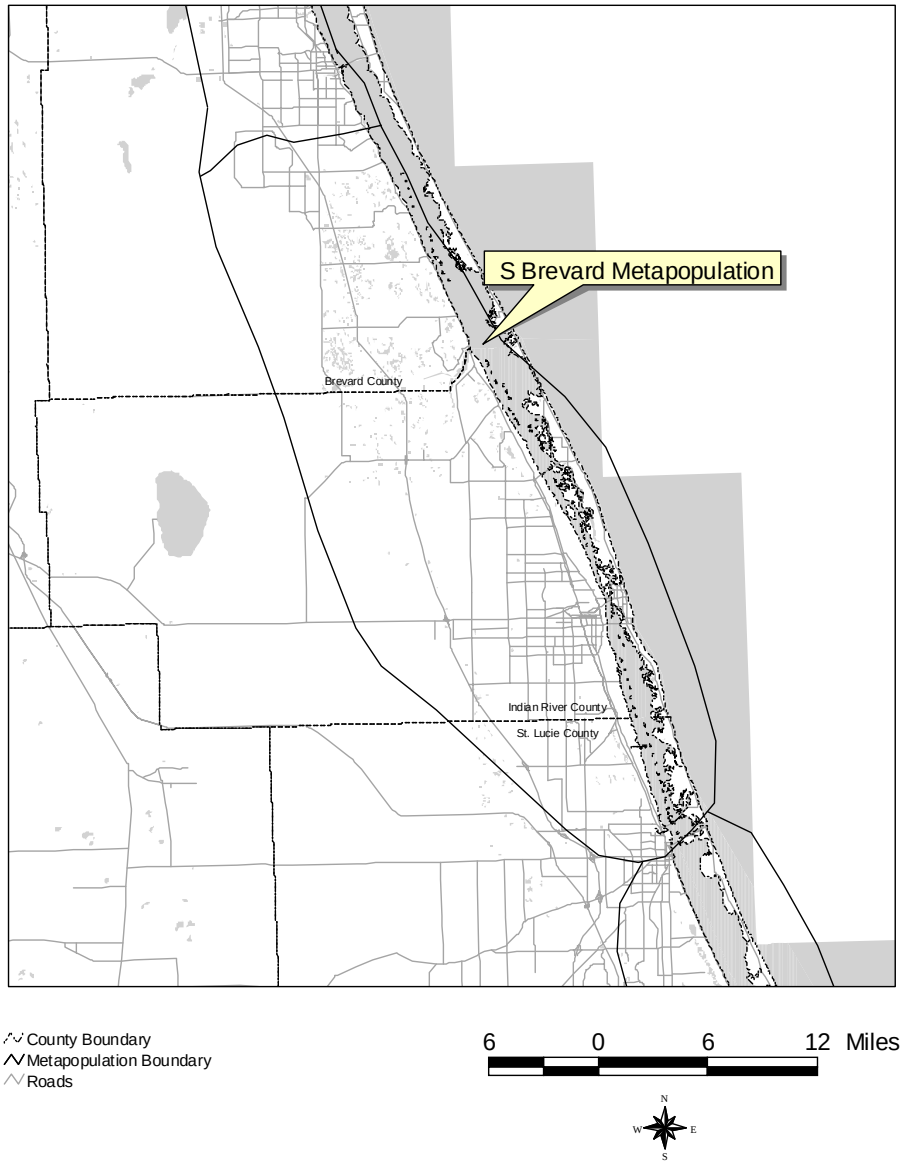
Palm Beach Metapopulation

Figure D.18. Pasco metapopulation.



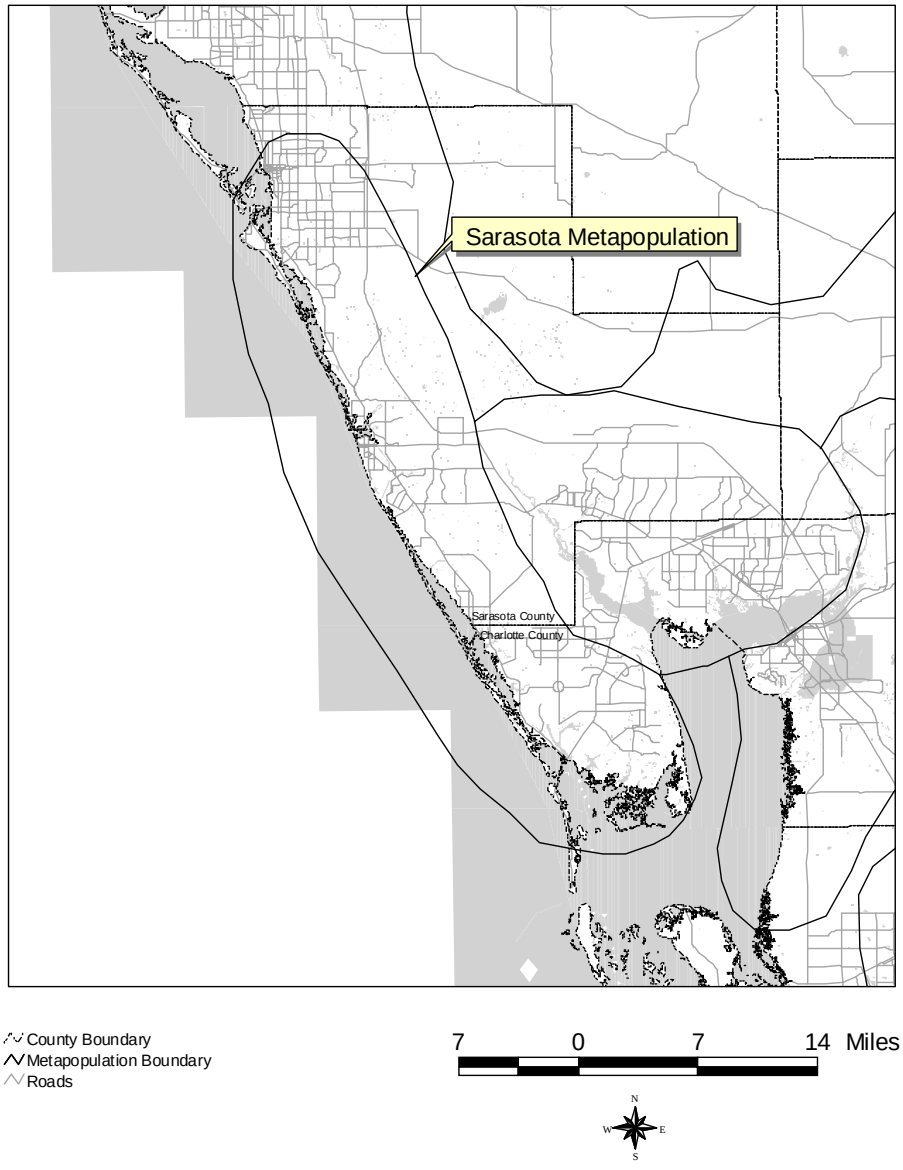
Pasco Metapopulation

Figure D.19. South Brevard metapopulation.



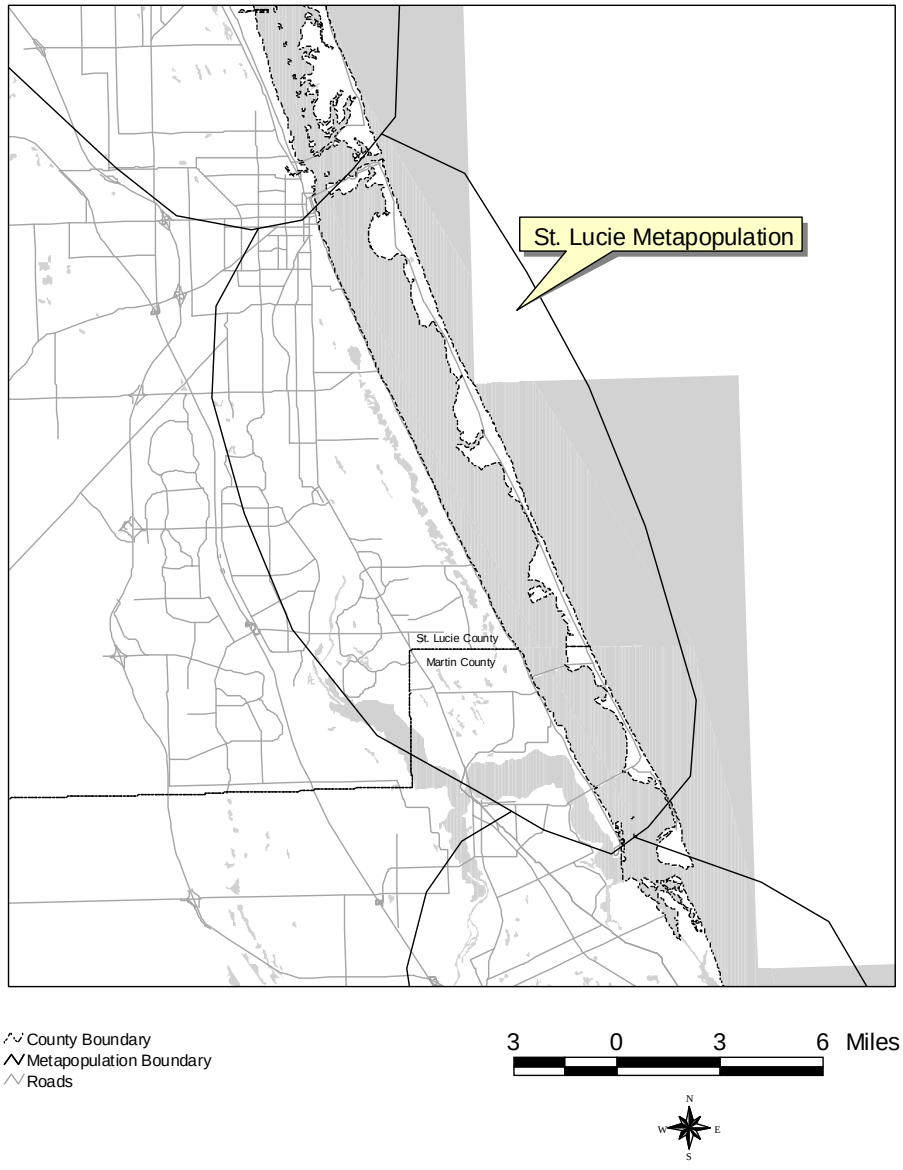
S Brevard Metapopulation

Figure D.20. Sarasota metapopulation.



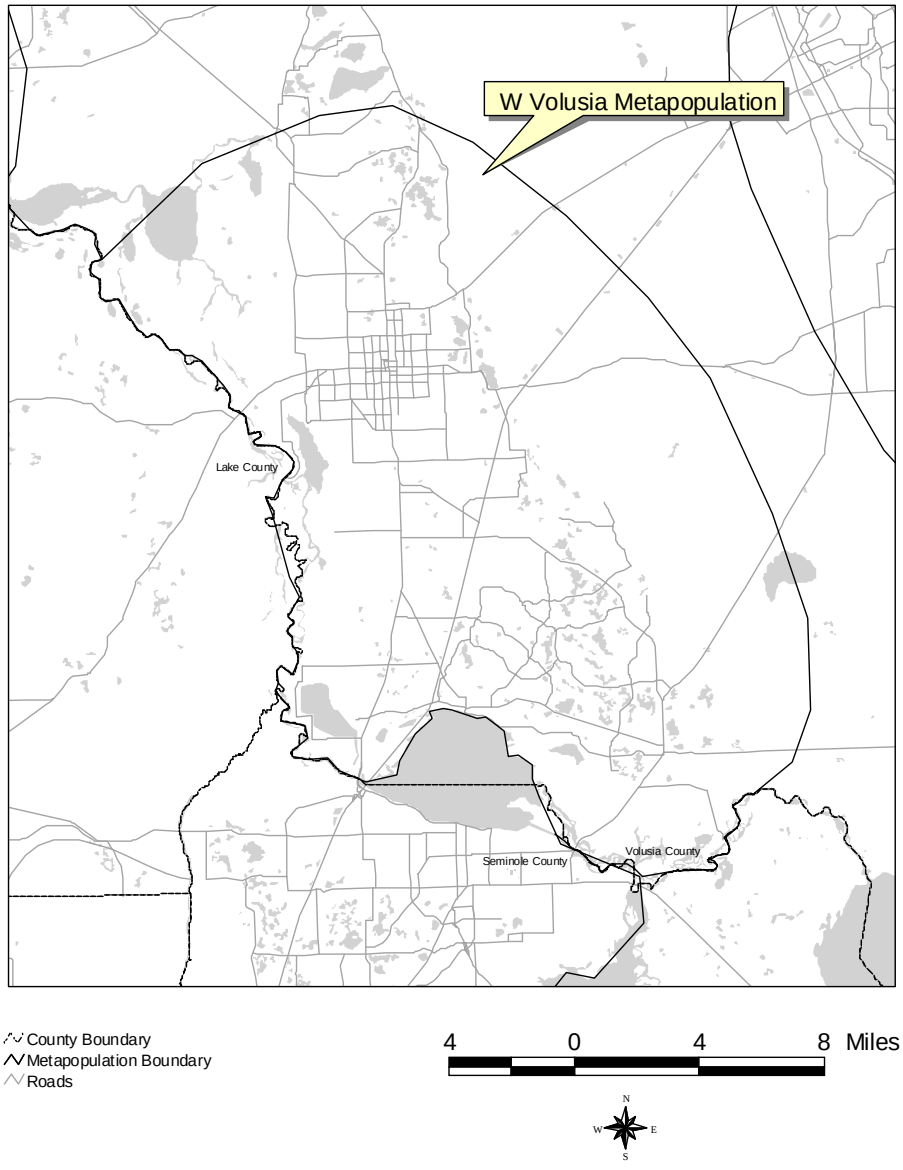
Sarasota Metapopulation

Figure D. 21. St. Luci metapopulation.



St. Lucie Metapopulation

Figure D.22. West Volusia metapopulation.



W Volusia Metapopulation