

**DEPARTMENT OF THE INTERIOR****Fish and Wildlife Service****50 CFR Part 17**

[Docket No. FWS-R3-ES-2012-0079;  
4500030113]

**Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List the Prairie Gray Fox, the Plains Spotted Skunk, and a Distinct Population Segment of the Mearn's Eastern Cottontail in East-Central Illinois and Western Indiana as Endangered or Threatened Species**

**AGENCY:** Fish and Wildlife Service, Interior.

**ACTION:** Notice of 90-day petition finding and initiation of status review.

**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to list the prairie gray fox (*Urocyon cinereoargenteus ocythous*), the plains spotted skunk (*Spilogale putorius interrupta*), and a distinct population segment (DPS) of the Mearn's eastern cottontail (*Sylvilagus floridanus mearnsi*) in Illinois and western Indiana as endangered or threatened species under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition presents substantial scientific or commercial information that listing the prairie gray fox and the plains spotted skunk may be warranted. Therefore, with the publication of this notice, we initiate a review of the status of the prairie gray fox and the plains spotted skunk to determine if listing either of these subspecies is warranted. To ensure that this status review is comprehensive, we are requesting scientific and commercial data and other information regarding these subspecies. Based on the status review, we will issue a 12-month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

We also evaluated whether the petition presents substantial information to indicate whether or not the Mearn's eastern cottontail in east-central Illinois and western Indiana qualifies as a DPS that may be warranted for listing. Based on our review, we conclude that the petition does not provide substantial information indicating that population of Mearn's eastern cottontail in east-central Illinois and western Indiana is a listable entity under the Act. Because the petition does not present substantial information indicating that the

population of Mearn's eastern cottontail in east-central Illinois and western Indiana may be a listable entity, we did not evaluate whether or not the information contained in the petition regarding threats to that population was substantial. We are not initiating a status review in response to this petition for Mearn's eastern cottontail in east-central Illinois and western Indiana. However, we ask the public to submit to us any new information that becomes available concerning the status of, or threats to, the Mearn's eastern cottontail or its habitat at any time.

**DATES:** The finding announced in this document was made on December 4, 2012.

We request that we receive information on or before February 4, 2013. The deadline for submitting an electronic comment using the Federal eRulemaking Portal (see **ADDRESSES** section, below) is 11:59 p.m. Eastern Time on this date. After February 4, 2013, you must submit information directly to the Division of Policy and Directives Management (see **ADDRESSES** section below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

**ADDRESSES:** You may submit information on the prairie gray fox and the plains spotted skunk, by one of the following methods:

(1) *Electronically:* Go to the Federal eRulemaking Portal: <http://www.regulations.gov>. Search for Docket No. FWS-R3-ES-2012-0079, which is the docket number for this action. Then click on the Search button. You may submit a comment by clicking on "Comment Now!."

(2) *By hard copy:* Submit by U.S. mail or hand-delivery to: Public Comments Processing, Attn: FWS-R3-ES-2012-0079; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, MS 2042-PDM; Arlington, VA 22203.

We will not accept email or faxes. We will post all information we receive on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the Request for Information section below for more details).

This finding is available on the Internet at <http://www.regulations.gov> at Docket Number FWS-R3-ES-2012-0079. Supporting documentation we used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Rock Island, Illinois Ecological Service Field Office, 1511 4th Ave.,

Moline, IL 61265. Please submit any new information, materials, comments, or questions concerning the finding on the prairie gray fox and the plains spotted skunk to the Rock Island, Illinois Ecological Services Field Office at the above address.

**FOR FURTHER INFORMATION CONTACT:****Prairie Gray Fox and Mearn's Eastern Cottontail**

Richard Nelson, Field Supervisor, Rock Island, Illinois Ecological Service Field Office, 1511 4th Ave., Moline, IL 61265; by telephone at 309-757-5800; or by facsimile at 309-757-5804. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

**Plains Spotted Skunk**

Amy Salveter, Field Supervisor, Missouri Ecological Services Field Office, 101 Park DeVillie Drive, Suite A, Columbia, MO 65203; by telephone at 573-234-2132; or by facsimile at 573-234-2181. If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

**SUPPLEMENTARY INFORMATION:****Request for Information**

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly initiate review of the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on the prairie gray fox and the plains spotted skunk from governmental agencies, Native American tribes, the scientific community, industry, and any other interested parties. We seek information on:

- (1) The species' biology, range, and population trends, including:
  - (a) Habitat requirements for feeding, breeding, and sheltering;
  - (b) Genetics and taxonomy;
  - (c) Historical and current range, including distribution patterns;
  - (d) Historical and current population levels, and current and projected trends; and
  - (e) Past and ongoing conservation measures for the species, its habitat, or both.
- (2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Act (16 U.S.C. 1531 *et seq.*), which are:

(a) The present or threatened destruction, modification, or curtailment of its habitat or range;

(b) Overutilization for commercial, recreational, scientific, or educational purposes;

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

(e) Other natural or manmade factors affecting its continued existence.

(3) Information regarding overharvest and disease as potential ongoing threats to the plains spotted skunk and prairie gray fox.

(4) Information regarding the impacts of pesticides on food availability for the plains spotted skunk.

(5) Information regarding the impacts of predation by coyotes and bobcats on the prairie gray fox.

If, after the status review, we determine that listing the prairie gray fox or the plains spotted skunk is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act) under section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, we also request data and information on:

(1) What may constitute "physical or biological features essential to the conservation of the species," within the geographical range currently occupied by the species;

(2) Where these features are currently found;

(3) Whether any of these features may require special management considerations or protection;

(4) Specific areas outside the geographical area occupied by the species that are "essential for the conservation of the species"; and

(5) What, if any, critical habitat you think we should propose for designation if one or both of the species are proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

Please include sufficient information with your submission (such as scientific journal articles or other publications) to allow us to verify any scientific or commercial information you include.

Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the Act directs that determinations as to whether any species is an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available."

You may submit your information concerning this status review by one of

the methods listed in the **ADDRESSES** section. If you submit information via <http://www.regulations.gov>, your entire submission—including any personal identifying information—will be posted on the Web site. If your submission is made via a hardcopy that includes personal identifying information, you may request at the top of your document that we withhold this personal identifying information from public review. However, we cannot guarantee that we will be able to do so. We will post all hardcopy submissions on <http://www.regulations.gov>.

#### Background

Section 4(b)(3)(A) of the Act requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

Our standard for substantial scientific or commercial information within the Code of Federal Regulations (CFR) with regard to a 90-day petition finding is "that amount of information that would lead a reasonable person to believe that the measure proposed in the petition may be warranted" (50 CFR 424.14(b)). If we find that substantial scientific or commercial information was presented, we are required to promptly initiate a species status review, which we subsequently summarize in our 12-month finding.

#### Petition History

On July 18, 2011, we received a petition from Mr. David Wade and Dr. Thomas Alton, requesting that five or six entities of grassland thicket species or subspecies be listed as endangered or threatened under the Act. The petition clearly identified itself as such and included the requisite identification information for the petitioners, required at 50 CFR 424.14(a). However, while reviewing the petition, we determined that the petition did not clearly state which species were included in the petition. Therefore, in a September 2, 2011, letter to the petitioners, we provided the petitioners with an opportunity to revise the petition to clearly identify the petitioned entities, which the petitioners accepted in a September 12, 2011, response to our

letter. On January 23, 2012, we received a revised petition from Mr. David Wade and Dr. Thomas Alton, requesting that the prairie gray fox (*Urocyon cinereoargenteus ocythous*), the plains spotted skunk (*Spilogale putorius interrupta*), and a DPS of the Mearn's eastern cottontail (*Sylvilagus floridanus mearnsi*) in Illinois and western Indiana be listed as endangered or threatened species under the Act. In a January 30, 2012, letter to the petitioners, we responded that we reviewed the information presented in the petition and determined that issuing an emergency regulation temporarily listing the species under section 4(b)(7) of the Act was not warranted as each of the three petitioned species has extant populations in several States and most of the threats mentioned in the petition are not immediate in nature. This finding addresses the petition.

#### Previous Federal Action(s)

To date, no Federal actions have been taken with regard to the prairie gray fox, the plains spotted skunk, or the Mearn's eastern cottontail.

#### Species Information

##### Plains Spotted Skunk (*Spilogale putorius interrupta*)

The plains spotted skunk is one of three recognized subspecies of the eastern spotted skunk (*Spilogale putorius*); the other two recognized subspecies are *S. p. ambarvalis* (no common name) and *S. p. putorius* (no common name) (Kinlaw 1995, p. 1). Spotted skunks are members of the Order Carnivora and Family Mephitidae. Eastern spotted skunks are distinct from western spotted skunks (*S. gracilis*) based on reproductive and geographic isolation (Kinlaw 1995, p. 1). Little variation in skull or body measurements exists among the plains spotted skunk subspecies (Van Gelder 1959, p. 270). The plains spotted skunk can be distinguished from other subspecies by the reduced amount of white on its body, particularly the entirely black tail (Van Gelder 1959, pp. 269–270). We accept the characterization of the plains spotted skunk as a subspecies because of morphological distinction of its color pattern from other subspecies of eastern spotted skunk (Van Gelder 1959, pp. 269–270). We consider information that refers to the eastern spotted skunk where it occurs in the delineated range of the plains spotted skunk to represent the plains spotted skunk.

Both the plains spotted skunk and striped skunk (*Mephitis mephitis*) have contrasting black and white markings;

however, they are easily distinguished by size (spotted skunks are substantially smaller) and color pattern. The plains spotted skunk is a small, slender mammal with short legs and a tail with prominent, long hairs. Body weight ranges from 300 to 1,300 grams (g) (0.75 to 2.75 pounds (lb)), and total length ranges from 36 to 61 centimeters (cm) (14 to 23.75 inches (in)) (Hazard 1982, p. 143; Schwartz and Schwartz 2001, p. 325). In contrast, the striped skunk's average weight is 6,300 g (14 lb), and its length is 80 cm (31.5 in). The plains spotted skunk is black overall with narrow, white stripes and spots. Four stripes on the neck, back, and sides run longitudinally from the head to the middle of the body. The four white stripes break into patches or spots on the hindquarters. There is a white spot on the forehead and in front of each ear (Hazard 1982, p. 143; Schwartz and Schwartz 2001, p. 325).

Habitat associations of this subspecies are likely influenced by whether it is using a natural or human-dominated landscape. The subspecies lives in a wide range of habitats including forests, prairies, brushy areas, farmyards, and cultivated land (Crabb 1948, pp. 212–215; Edmonds 1974, p. 12; Kinlaw 1995, p. 4; Schwartz and Schwartz 2001, p. 327). Regardless of habitat type used, the plains spotted skunk requires extensive vegetative cover. Brushy borders along fields, fence rows, farm buildings, wood piles, heavily vegetated gullies, leaf litter, or downed logs may provide the required extensive cover, which primarily provides protection from predators (Kinlaw 1995, p. 4; Schwartz and Schwartz 2001, p. 327; Lesmeister 2008, pp. 1517–1518). Nowak (1999, p. 734) notes that spotted skunks avoid dense forests; however, plains spotted skunks are more likely to occur where the landscape is composed of a high proportion of forest cover (Hackett 2008, pp. 52–54), and they use oak-hickory forests more than old fields or glades (McCullough 1983, pp. 40–43). Within forest habitats studied by McCullough (1983, p. 41) and Lesmeister (2007, p. 21), skunks used young, dense forest stands or stands with downed logs and slash more often than mature stands with open understories and clean forest floors. Spotted skunks also require an early successional (process by which ecological communities undergo changes following disturbance) component to their habitat to provide cover and denning areas (Lesmeister 2007, p. 56; Lesmeister *et al.* 2009, pp. 23–24).

Dens can be located above ground or below ground. In natural landscapes,

plains spotted skunks den in grassy banks and crevices or cavities under rock piles, hollow logs, and stumps (Kinlaw 1995, p. 4; Schwartz and Schwartz 2001, p. 327). In landscapes dominated by humans, they den in shelterbelts (row of trees planted to provide shelter from wind), fencerows, farm buildings, haystacks, woodpiles, or corn cribs (Crabb 1948, pp. 214–215; Hazard 1982, p. 144; Jones *et al.* 1983, p. 302; Kinlaw 1995, p. 4; Schwartz and Schwartz 2001, p. 327). Plains spotted skunks might dig their own dens, but they often use burrows excavated by other animals, such as Franklin's ground squirrel (*Spermophilus franklinii*), thirteen-lined ground squirrel (*S. tridecemlineatus*), woodchuck (*Marmota monax*), long-tailed weasel (*Mustela frenata*), striped skunk, and woodrats (*Neotoma* spp.) (Crabb 1948, p. 212; Kinlaw, 1995, p. 4; Schwartz and Schwartz 2001, p. 327). Crabb (1948, p. 212) noted that skunks required dens that excluded light and afforded protection from inclement weather and predators. Dens are used by one or more members of the local population of plains spotted skunks, and individuals might den together during cold winter months (Schwartz and Schwartz 2001, p. 327).

During most of the year, individual plains spotted skunks remain in an area of approximately 40 hectares (ha) (98.8 acres (ac)), but the home range can vary based on habitat quality and food availability (Schwartz and Schwartz 2001, p. 327). The home range can vary seasonally as well; in spring, the range of males can expand to as much as 1,040 ha (2,569.9 ac) (Schwartz and Schwartz 2001, p. 327). In Missouri, home ranges varied from 55 to 4,359 ha (135.9 to 10,771.3 ac) (McCullough 1983, p. 34). Lesmeister *et al.* (2008, p. 21) reported that home ranges in the Ouachita Mountains of Arkansas varied by gender and season. The home ranges of males (222 to 1,824 ha (548.6 to 4,507.2 ac)) in the spring were 6.4 times larger than those of females (31 to 192 ha (76.6 to 474.4 ac)). Likewise, male home ranges were at least 2.5 times larger than females' ranges in the winter and summer, but not autumn. Overall, home range size varied from 19 to 1,824 ha (47.0 to 4,507.2 ac) for males and 21 to 192 ha (51.9 to 474.4 ac) for females (McCullough 1983, p. 34; Lesmeister *et al.* 2008, p. 21). Crabb (1948, p. 218) found that spotted skunks on an agricultural landscape in Iowa occurred at a density of approximately 5 skunks per square kilometer (km<sup>2</sup>) (13 skunks per square mile (mi<sup>2</sup>)).

The plains spotted skunk is omnivorous, but is primarily an

insectivore and feeds on insects during all seasons of the year (Kinlaw 1995, p. 4). The proportion of different types of food items varies seasonally. Arthropods are the major dietary component during summer and autumn, with grasshoppers, crickets, ground beetles, and scarab beetles being the preferred food (Schwartz and Schwartz 2001, p. 328). In the winter, small mammals, including eastern cottontail (*Sylvilagus floridanus*), voles (*Microtus pennsylvanicus* and *M. ochrogaster*), and rats (*Rattus norvegicus*), are the dominant food source (Chapman and Feldhamer 1982, p. 668; Kinlaw 1995, p. 4). Other foods include birds, eggs, wild ducks that are injured or killed by hunters, fruit, corn, lizards, snakes, crayfish, salamanders, and mushrooms (Schwartz and Schwartz 2001, p. 328).

The plains spotted skunk currently (and historically) occurs between the Mississippi River and the Continental Divide from Minnesota to the Gulf of Mexico (Kinlaw 1995, p. 3). Historical records indicate that the plains spotted skunk was broadly distributed across its range through the early to mid-1900s and was one of the most common mesocarnivores (a carnivore whose diet consists of 50 to 70 percent meat) where suitable habitat occurred (Crabb 1948, p. 203; Choate *et al.* 1973, p. 226; Tyler and Lodes 1980, p. 102; McCullough 1983, p. 19; Wires and Baker 1994, p. 1; Schwartz and Schwartz 2001, p. 327). Likewise, harvest records in the Midwest indicate that population levels in most States were at their highest through the mid-1900s, during which harvest in most years exceeded 100,000 plains spotted skunks (Novak *et al.* 1987, pp. 223–226).

More contemporary records consistently show that the plains spotted skunk underwent declines in the mid- to late 1900s (Choate *et al.* 1973, pp. 227–230; McCullough 1983, pp. 19–25; Gompper and Hackett 2005, p. 196; Nilz and Finck 2008, pp. 5–14). Declines occurred first in Missouri and Oklahoma in the late 1930s and early 1940s, followed by Nebraska in the mid-1940s, and Kansas, Iowa, and Minnesota in the mid- to late 1940s (Wires and Baker 1994, p. 1; Gompper and Hackett 2005, p. 199). Harvest numbers for the plains spotted skunk from 1934–1935 were 248,062 (Service calculated from Novak *et al.* 1987, pp. 223–226, for States in the range of the subspecies). More recent harvest information for 1975–1976 showed that only 1,476 plains spotted skunks were harvested (Service calculated from Novak *et al.* 1987, pp. 223–226, for States in the range of the subspecies), which is less than 1 percent of the 1934–1935 harvest.

Gompper and Hackett (2005, p. 199) demonstrated rangewide declines in the plains spotted skunk based on harvest records and found that the decline was not an artifact of reduced trapper effort or demand for spotted skunk pelts.

The subspecies likely still occupies the same habitat types and occurs in all the States within its historical range (Arkansas, Colorado, Minnesota, Missouri, Nebraska, Oklahoma, South Dakota, Texas, and Wyoming), but in lower abundance (Choate *et al.* 1973, p. 231). Range fragmentation and reduced abundance of the subspecies is recorded through trapper records, fur buyer surveys, public surveys, and focused field surveys (Hammond and Busby 1994, pp. 1–4; Wires and Baker 1994, pp. 3–7); these records also document locations where viable populations likely occur (*e.g.*, Ozark Plateau (McCullough 1983, p. 52; Hackett 2005, pp. 51–52) and Ouachita Mountains (Lesmeister *et al.* 2010, pp. 54–58)).

#### Prairie Gray Fox (*Urocyon cinereoargenteus ocythous*)

Gray fox (*Urocyon cinereoargenteus*) are mammals of the Order Carnivora and Family Canidae. *U. c. ocythous* is a recognized subspecies of the gray fox. In this finding, we refer to the subspecies *U. c. ocythous* as the prairie gray fox, as this is the common name the petition uses, although there is no recognized common name for this subspecies. The prairie gray fox was first described by Bangs in 1899 (Fritzell and Haroldson 1982, p. 1; Hall 1981, p. 943). We accept the characterization of the prairie gray fox as a subspecies of the gray fox as noted in Chapman and Feldhammer (1982, p. 475), Fritzell and Haroldson (1982, p. 1), and Hall (1981, p. 943). Few references refer specifically, by name, to *U. c. ocythous*; therefore, we consider information available for the gray fox within the delineated prairie gray fox range to represent the petitioned subspecies.

The following characteristics describe the gray fox species in general, as they are similar to the characteristics of the prairie gray fox subspecies. The gray fox has a distinguishable appearance with gray fur on its upper body; reddish fur on its neck, the sides of the belly, and inner legs; and white on the rest of its underbody. The guard hairs (long, coarse hairs that protect soft underfur) are banded with white, gray, and black, which gives the fox's fur a grizzled appearance. It has a black tipped tail and a coarse dorsal mane of black-tipped hairs at the base of its tail (Chapman and Feldhammer 1982, p. 476; Fritzell and Haroldson 1982, p. 1; Hall 1981, p. 942; Hamilton and

Whitaker 1979, p. 270). Gray fox are also distinguished from other canids by their widely separated temporal ridges that come together posteriorly in a U-shaped form (Chapman and Feldhammer 1982, p. 476; Fritzell and Haroldson 1982, p. 1; Hall 1981, p. 942; Hamilton and Whitaker 1979, p. 270). Gray fox are smaller than the red fox (*Vulpes vulpes*), with a total length of 80 to 112.5 centimeters (cm) (31.5 to 44.3 inches (in)), weight of 3 to 7 kilograms (6.6 to 15.4 lb), and males are slightly larger than females (Fritzell and Haroldson 1982, p. 1). The size of gray fox varies with geographic location, with individuals in the northern part of the range larger than those in the south (Hamilton and Whitaker 1979, p. 270).

Gray fox are generally associated with wooded habitats (Haroldson and Fritzell 1984, p. 226; Fritzell and Haroldson 1982, p. 3; Hamilton and Whitaker 1979, p. 270). Gray fox use oak-hickory forests almost exclusively in southern Missouri, and are frequently found in dense stands of young trees during the day (Haroldson and Fritzell 1984, pp. 226–227). This study noted, however, that forest habitat was the most abundant habitat type in their study area and the importance of wooded habitat is dependent on its availability, and will be used disproportionately to its abundance when wooded habitat is scarce (Haroldson and Fritzell 1984, p. 226). Gray fox use woody cover in deciduous or pine forest, but they also use edge habitat and early old-fields (open habitats that are transitioning from field to forest and are dominated by forbs, grass, and shrubs and small trees) (Fritzell and Haroldson 1982, p. 3). The gray fox tends to select against agricultural areas (Fritzell and Haroldson 1982, p. 3). Cooper (2008, p. 24) found a greater relative abundance of gray fox in Illinois, where there was a greater dispersion of grassland patches into forested areas, and lower densities in areas with larger patches of agricultural fields. A notable characteristic of the gray fox is their ability to climb trees; gray fox are capable of climbing a tree trunk using their claws to grasp and pull themselves up or bounding from branch to branch (Fritzell and Haroldson 1982, p. 5; Hamilton and Whitaker 1979, p. 270). This behavior is used during foraging, predator avoidance, or resting (Fritzell and Haroldson 1982, p. 5).

Gray fox dens are usually located in wooded areas and include underground burrows, cavities in trees or logs, wood-piles, and rock outcrops or cavities under rocks (Jones *et al.* 1985, p. 264; Fritzell and Haroldson 1982, p. 189). Gray fox will use dens year-round, but

predominantly when young are born. Gray fox mate at different times of the year, depending on their geographic location (Chapman and Feldhammer 1982, p. 476). For example, for the prairie gray fox, breeding lasts from late January through February in southern Illinois and from late January through March in Wisconsin (Fritzell and Haroldson 1982, pp. 3–4). The average litter size for the gray fox is 3.8 pups per female, with litters ranging from 1 to 7 pups (Fritzell and Haroldson 1982, p. 4).

The home range of the gray fox varies depending on the season and geographic location (Fritzell and Haroldson 1982, p. 4). Males in southern Illinois were found to have a home range of 136 ha (336.1 ac), and females a home range of 107 ha (264.4 ac) (Fritzell and Haroldson 1982, p. 4). A study by Haroldson and Fritzell (1984, p. 225) conducted in a Missouri oak-hickory forest indicated that nightly range use by gray fox was a fraction of the total monthly range. They also found composite (multiple month) home ranges (average 676 (+/–) 357 ha (1,670 (+/–) 882 ac)) are much larger than the individual month home ranges (average 299 (±) 155 ha (738 (±) 383 ac)) (Haroldson and Fritzell 1984, p. 223). Haroldson and Fritzell (1984, p. 226) also indicated that gray fox home ranges vary among populations. Gray fox are more active at night, with activity at sunrise sharply decreasing and increasing again at sunset (Haroldson and Fritzell 1984, p. 224).

The gray fox is primarily an opportunistic carnivore, with mammals composing most of its diet in the Midwest (Fritzell and Haroldson 1982, p. 4). According to Chapman and Feldhammer (1982, p. 480), the gray fox's diet depends highly on what is available. Although rabbits have been found to be one of their primary food sources, they routinely feed on small rodents and other mammals, birds, and reptiles (Jones *et al.* 1985, p. 264; Fritzell and Haroldson 1982, p. 4). In the summer, invertebrates have been found to be more important food items, while in the fall, the gray fox consumes more fruit and sometimes corn (Chapman and Feldhammer 1982, p. 476; Fritzell and Haroldson 1982, p. 4; Hamilton and Whitaker 1979, p. 272).

The plains gray fox ranges primarily west of the Mississippi and Illinois Rivers through portions of the central plain States. The historical range for this subspecies included western Wisconsin, Minnesota, Iowa, Missouri, Arkansas, and the eastern sections of North and South Dakota, Nebraska, Kansas, and Oklahoma in the United States, and the

southernmost sections of Ontario and Manitoba, Canada (Hall 1981, p. 944).

The petition asserts that prairie gray fox numbers have declined in many of the States within its range (Petition, unpaginated). The petition mentions that the Department of the Interior used scent stations to track the relative abundance of several predators, including the gray fox, in many western States. The average Statewide indices between the 1980 and 1981 surveys showed a decline in Minnesota from 2.4 to 1.9, and in Oklahoma from 2.0 to 1.0 (U.S. Department of the Interior 1981, pp. 42, 70; U.S. Department of the Interior 1980, pp. 44, 72). The Statewide indices for Kansas, Nebraska, North Dakota, South Dakota, and Wisconsin were zero in both 1980 and 1981 (U.S. Department of the Interior 1981, pp. 38, 52, 66, 78, 98; U.S. Department of the Interior 1980, pp. 40, 54, 68, 80, 100). There was an increase in the numbers of gray fox between 1980 and 1981 in Illinois; however, all of the scent stations recorded were outside the range of the prairie gray fox subspecies, so they were likely a different subspecies (U.S. Department of the Interior 1981, p. 36; U.S. Department of the Interior 1980, p. 36). The petitioners cite these numbers when asserting that the prairie gray fox was rare to absent in the plains States by 1980 (Petition, unpaginated). The petitioners cite the Minnesota Department of Natural Resources' annual carnivore scent station survey as including gray fox in their "fox" numbers (Petition unpaginated); however we can find no indication in this reference that gray fox were counted during those surveys (Erb 2010, p. 43–57).

The Missouri Department of Conservation's annual Archer's Index to Furbearer Populations shows a 75 percent decline in gray fox numbers since 1983 (petition unpaginated; Blair 2011, p. 31). The petitioners state that the number of gray fox in Wisconsin, as observed by the Wisconsin Department of Natural Resources during routine field work, was comparable to the badger, which is listed by the State as endangered (Petition, unpaginated). The report does indicate that the number of gray fox observed in 2010 was 0.78 observations per respondent, which is

higher than the long-term average (during the 23 years of the study) of 0.42 observations per respondent (Kitchell 2010, unpaginated). The number of gray fox counted during the annual Bowhunter Observation Survey in Arkansas have been low but stable from 2005–2010 (Petition, unpaginated; Sasse 2011, unpaginated). The numbers of gray fox counted during the Iowa 2010 Bowhunter Observation Survey were fewer than the margin of error for some of the regions and showed an overall decline in the State (Petition, unpaginated; Roberts and Clark 2011, unpaginated). The petitioners attribute this decline to the loss of preferred habitat and the increase in agricultural habitat, which gray fox avoid (Petition, unpaginated; Cooper 2008, p. 24; Fritzell and Haroldson 1982, p. 189). Although the evidence included in the petition and within our files shows a decline in the population of the prairie gray fox for several States, there are no studies included that specifically indicate what the population of the prairie gray fox was prior to human settlement or how much the population has declined rangewide.

#### Mearn's Eastern Cottontail (*Sylvilagus floridanus mearnsi*)

Eastern cottontail (*Sylvilagus floridanus*) are members of Order Lagomorpha and Family Leporidae. The Mearn's eastern cottontail (*Sylvilagus floridanus mearnsi*) is a recognized subspecies of the eastern cottontail, as first described in 1894 by J.A. Allen (Hall and Kelson 1981, p. 304; Chapman *et al.* 1980, p. 1). We accept the characterization of the Mearn's eastern cottontail (*S. f. mearnsi*) as a subspecies of the eastern cottontail rabbit as described in Chapman *et al.* (1980, p. 1), and Hall and Kelson (1959, p. 262). Few references relate specifically to the Mearn's eastern cottontail; therefore, we consider information available for the eastern cottontail to represent the petitioned subspecies.

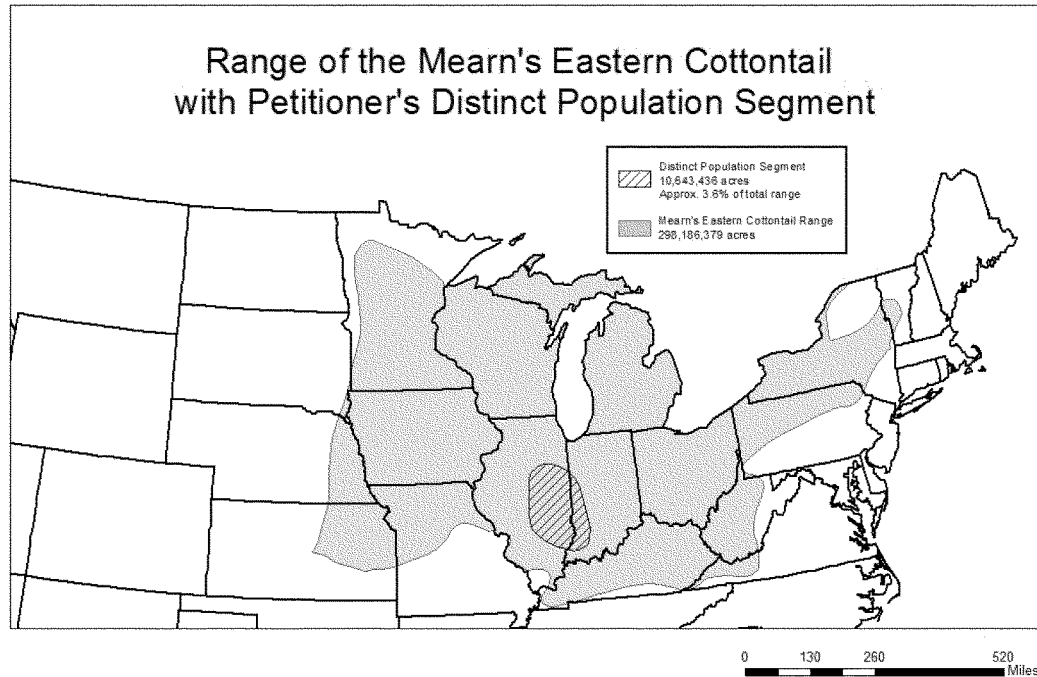
The eastern cottontail is described as having a total length of 395 to 456 mm (15.6 to 18.0 in) and weighing 801 to 1,411 g (28.3 to 49.8 ounces (oz)) for males, and 400 to 477 mm (15.7 to 18.8 in) and weighing 842 to 1,533 g (29.7 to 54.1 oz) for females (Chapman *et al.*

1981, p. 136). They have dense fur, ranging from brownish to greyish in color, with white fur on the underside of the body and tail. The average home range for the eastern cottontail varies from approximately 1 to 2 acres (0.4 to 1 ha) in Wisconsin (Trent and Rungstad 1974) to around 4 acres (2 ha) in Pennsylvania, with male home ranges increasing to an average of 17 to 19 acres (7 to 8 ha) in spring and summer (Althoff and Storm 1989). The eastern cottontail is the most widely distributed cottontail species in North America (Scharine *et al.* 2011, p. 885; Hall and Kelson 1981, p. 300; Chapman *et al.* 1980, p. 2) and occurs sympatrically with six species of the genus *Sylvilagus* and six species of the genus *Lepus* (Chapman *et al.* 1980, p. 136).

In describing eastern cottontail habitat, Chapman *et al.* (1980, p. 2) stated, "This cottontail is generally thought of as a mammal of farmlands, fields, and hedge rows; however, historically it occurred in natural glades and woodlands, deserts, swamps, prairies, hardwood forests, rain forests, and boreal forests." When comparing the eastern cottontail to the swamp rabbit (*S. aquaticus*), Scharine *et al.* (2011, p. 881) stated that the dense understory vegetation provided by early successional cover types are important habitat for both species; however, the eastern cottontail is a habitat generalist and occupies a larger distribution. Mankin and Warner (1999b, p. 960) identified eastern cottontails in old fields, grasslands, hedgerows, cropland, and urban areas, but found that the species preferred open shrub land.

The Mearn's eastern cottontail occurs across a large portion of the eastern cottontail's range, including the entire States of Iowa, Wisconsin, Michigan, Indiana, and Ohio; most of Minnesota, Illinois, and Kentucky; southwestern New York; northern Pennsylvania; western West Virginia; northern Missouri; northeastern Kansas; eastern Nebraska; a small portion of the southeastern corner of South Dakota; and the small portion of the western edge of Virginia (Figure 1) (Hall and Kelson 1981, p. 261; Chapman *et al.* 1980, p. 3).

Figure 1. Mearn's eastern cottontail range within the United States adapted from Hall and Kelson (1981, p. 303) and the hand-drawn map provided in the petition, georeferenced using ArcMap 10.



#### *Distinct Population Segment Evaluation*

Under the Service's Policy Regarding the Recognition of Distinct Vertebrate Population Segments Under the Endangered Species Act (61 FR 4722, February 7, 1996), three elements are considered in the decision concerning the establishment and classification of a possible DPS. These are applied similarly for additions to or removal from the Federal List of Endangered and Threatened Wildlife. These elements include:

(1) The discreteness of a population in relation to the remainder of the taxon to which it belongs;

(2) The significance of the population segment to the taxon to which it belongs; and

(3) The population segment's conservation status in relation to the Act's standards for listing, delisting (removal from the list), or reclassification (*i.e.*, is the population segment endangered or threatened).

Our understanding of the petitioners' requested action is that the population of Mearn's cottontail in east-central Illinois and western Indiana (Figure 1) be considered a DPS and listed as endangered or threatened under the Act. Therefore, in this analysis, we evaluate whether the petition provides substantial information that the Mearn's eastern cottontail in east-central Illinois and western Indiana may constitute a DPS.

#### *Discreteness*

Under our DPS Policy, a population segment of a vertebrate species may be considered discrete if it satisfies either one of the following conditions:

(1) It is markedly separated from other populations of the same taxon as a consequence of physical, physiological, ecological, or behavioral factors. Quantitative measures of genetic or morphological discontinuity may provide evidence of this separation.

(2) It is delimited by international governmental boundaries within which significant differences in control of exploitation, management of habitat, conservation status, or regulatory mechanisms exist that are significant in light of section 4(a)(1)(D) of the Act.

The petitioners describe the area of the petitioned DPS in the revised petition submission (dated January 23, 2012) as follows: "this region covers the former Grand Prairie region of Illinois and western Indiana." However, the submitted description does not provide exact boundaries or reference maps for the petitioned DPS. Therefore, the DPS we consider in our evaluation is based on a hand-drawn map submitted by the petitioners in the original petition submission (dated July 18, 2011) (not paginated). For our DPS evaluation, we considered references provided with the original July 18, 2011, petition submission, references provided with the revised January 23, 2012, petition

submission, and other information readily available in our files.

The petition cites one study (Mankin and Warner 1999a) as the supporting evidence that the population of Mearn's eastern cottontail in east-central Illinois and western Indiana is: (1) Physically discrete from the rest of the subspecies; (2) ecologically distinct due to intensive agriculture leaving only artificial remnants of its original habitat; and (3) behaviorally distinct because individuals require home ranges averaging 7 times larger than other members of the eastern cottontail species.

The petitioners assert that the petitioned DPS occupies an ecologically distinct area where intensive agriculture has left only artificial remnants of its original habitat. Mankin and Warner (1999a, p. 940) state that east-central Illinois is one of the most intensively farmed regions in North America. This is supported by the findings of Ribic *et al.* (1998), which suggest a decrease in the quantity of upland wildlife habitat in Illinois from 1920 to 1987, and an increase in farming disturbance, indicating an intensification of agricultural practices for the State during that time period. They found that the western and southern portions of the State had higher wildlife habitat values than the rest of the State and that harvest of eastern cottontails was higher in counties with the most upland habitat and the lowest amount of farming disturbance (Ribic *et al.* 1998,

pp. 307, 311). This differentiation is also supported by Mankin and Warner (1999b, p. 962), who showed that counties in east-central Illinois had the greatest decline in cottontail abundance and the highest increase in intense row-cropping.

The petitioners also cite Mankin and Warner (1999a) in stating that the DPS represents a population of Mearn's cottontail that is broken into small populations and is behaviorally distinct from other Mearn's cottontails. Mankin and Warner (1999a) studied the responses of Mearn's eastern cottontails to intensive row-crop agriculture in Ford County, Illinois, which is in the center of the proposed DPS. They found that the Mearn's eastern cottontail had a home range 2.3 times larger during the growing season for the crops than during the non-growing season (Mankin and Warner 1999a, p. 943). The cottontails in the study also had an overall home range that was 7 to 8 times larger than those found by previous research (Mankin and Warner 1999a, p. 945). Mankin and Warner (1999a, p. 945) specifically compared their findings to home ranges of Mearn's eastern cottontail in Wisconsin by Trent and Rongstad (1974), and indicated they were 8 times larger than Wisconsin males' home ranges and 7 times larger than females'. Chapman *et al.* (1980, p. 136) indicate that there have been many studies of home ranges of the eastern cottontail, with a mean for males of 0.95 ha (2.34 acres) to 2.8 ha (6.9 acres) and for females of 0.95 ha (2.34 acres) to 1.2 ha (2.96 acres). Mankin and Warner (1999a, pp. 944–945) found the population of cottontails in the Ford County, Illinois study area to be sparse yet stable. Although the cottontails used the crop ground extensively and 23 percent of the home ranges occurred on farmsteads, farmsteads made up less than 2 percent of the available habitat.

Based on the information submitted with the petition and information in our files, we find that the petition presents substantial information to suggest there may be a markedly separate population of Mearn's eastern cottontail in east-central Illinois and western Indiana due to behavioral differences when compared to the subspecies located elsewhere. The population of Mearn's eastern cottontail in east-central Illinois and western Indiana may be discrete from the rest of the Mearn's population because they occupy an area of intensive agriculture that leads to the behavior of maintaining different home-range sizes than the subspecies in the rest of the range. Therefore, this population of Mearn's cottontail may meet the discreteness criterion that it is

markedly separated from other populations of the same taxon based on behavioral reasons.

There are no international governmental boundaries associated with this subspecies that are significant. The population of Mearn's eastern cottontail in east-central Illinois and western Indiana lies wholly within the United States. Because this element is not relevant in this case for a finding of discreteness, it was not considered in reaching this determination.

#### Significance

If a population segment is considered discrete under one or more of the conditions described in our DPS policy, its biological and ecological significance will be considered in light of Congressional guidance that the authority to list DPSes be used "sparingly" while encouraging the conservation of genetic diversity. In making this determination, we consider available scientific evidence of the discrete population segment's importance to the taxon to which it belongs. As precise circumstances are likely to vary considerably from case to case, the DPS policy does not describe all the classes of information that might be used in determining the biological and ecological importance of a discrete population. However, the DPS policy does provide four possible reasons why a discrete population may be significant. As specified in the DPS policy (61 FR 4722), this consideration of the population segment's significance may include, but is not limited to, the following:

- (1) Persistence of the discrete population segment in an ecological setting unusual or unique to the taxon;
- (2) Evidence that loss of the discrete population segment would result in a significant gap in the range of a taxon;
- (3) Evidence that the discrete population segment represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historical range; or
- (4) Evidence that the discrete population segment differs markedly from other populations of the species in its genetic characteristics.

A population segment needs to satisfy only one of these criteria to be considered significant. Furthermore, the list of criteria is not exhaustive; other criteria may be used as appropriate.

The petitioners assert that the population of Mearn's eastern cottontail in east-central Illinois and western Indiana is significant because it represents approximately 20 percent of the range of the subspecies that was not

hybridized by the introductions of other species, and thus its loss would result in a significant gap in the range of the subspecies. The petition cites one reference, Chapman and Morgan 1973, to support their assertion. Chapman and Morgan (1973, p. 6) discuss the introduction of many species and subspecies of rabbits into the eastern United States from 1920 to 1950, and the impacts on the native rabbit species in western Maryland and the nearby portions of West Virginia. They found evidence of hybridization between native eastern cottontails and other rabbit species and subspecies from other parts of the country and the hybridization of the subspecies *S. f. mallurus* with other subspecies. The intergrade (hybridization) zone of eastern cottontail in the East has expanded, and it now out-competes the New England cottontail (*S. transitionalis*) in its traditional habitat (Chapman and Morgan 1973, p. 51). Although the study suggests that the eastern cottontail subspecies interbreed where they overlap, it does not specifically discuss how much habitat may be lost by each subspecies to hybridization. Therefore, when determining how much of the Mearn's eastern cottontail range is included in the petitioned DPS, we used the range from Hall and Kelson (1981, p. 303) as cited in the petition and the hand-drawn map from the original petition to generate the map in Figure 1. Using ArcGIS, we calculated that the area petitioned as a DPS makes up 3.6 percent of the Mearn's cottontail range and not the approximate 20 percent asserted by the petitioners. To calculate the size of the proposed DPS, we scanned the hand-drawn map included in the petition, georeferenced it to a map of the United States, and digitized the DPS boundary from the georeferenced scanned map. We used the same procedures to georeference the range of the Mearn's eastern cottontail from Hall's map (Hall 1980, p. 303). We were able to calculate the total acres of both the DPS and the Mearn's eastern cottontail range with the new digitized georeferenced maps. We then clipped the DPS from the full range to calculate the difference in acres and the percentage of the Mearn's eastern cottontail range that the DPS includes. Although the population of Mearn's eastern cottontail in east-central Illinois and western Indiana is located in the center of the subspecies' range, the petition does not provide substantial information, nor is there information available in our files, to suggest that loss

of this population would result in a significant gap in the range of a taxon.

The petition does not present information to suggest the population of Mearn's eastern cottontail in east-central Illinois and western Indiana may persist in an ecological setting unusual or unique to the taxon, evidence that the population represents the only surviving natural occurrence of a taxon that may be more abundant elsewhere as an introduced population outside its historical range, or evidence that the population differs markedly from other populations of the species in its genetic characteristics. Additionally, we do not have information in our files to indicate that these characteristics are met.

Substantial information is not presented in the petition, nor is it available in our files, to suggest that the population of Mearn's eastern cottontail in east-central Illinois and western Indiana is biologically or ecologically significant to the remainder of the taxon. Therefore, we determine, based on the information provided in the petition and in our files that the population of Mearn's eastern cottontail in east-central Illinois and western Indiana does not meet the significance criterion of the 1996 DPS policy.

#### **Finding for Mearn's Eastern Cottontail**

We reviewed the information presented in the petition and evaluated that information in relation to information readily available in our files. On the basis of this review, we find that neither the petition, nor information readily available in our files, suggests that the Mearn's eastern cottontail population in east-central Illinois and western Indiana meets the criteria for being significant under our DPS policy. Although the population may meet the criteria for being discrete under the DPS policy, neither the information in the petition, nor the information readily available in our files, suggests that this population of Mearn's eastern cottontail may be significant to the remainder of the taxon. Because both discreteness and significance are required to satisfy the DPS policy, we have determined that the Mearn's eastern cottontail population in east-central Illinois and western Indiana does not satisfy the elements of being a DPS under our 1996 policy and, therefore, is not a listable entity under section 3(16) of the Act. Because the petition does not present substantial information that the population of Mearn's eastern cottontail in east-central Illinois and western Indiana is a DPS, we did not evaluate whether the information contained in

the petition regarding the conservation status was substantial.

We encourage interested parties to continue to gather data that will assist with the conservation of the population of Mearn's eastern cottontail in east-central Illinois and western Indiana. If you wish to provide information regarding the Mearn's eastern cottontail, you may submit your information or materials to the Field Supervisor at the Rock Island, Illinois Ecological Service Field Office (see **ADDRESSES**), at any time.

#### **Evaluation of Information for This Finding**

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations at 50 CFR part 424 set forth the procedures for adding a species to, or removing a species from, the Federal Lists of Endangered and Threatened Wildlife and Plants. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1) of the Act:

- (A) The present or threatened destruction, modification, or curtailment of its habitat or range;
- (B) Overutilization for commercial, recreational, scientific, or educational purposes;
- (C) Disease or predation;
- (D) The inadequacy of existing regulatory mechanisms; or
- (E) Other natural or manmade factors affecting its continued existence.

In considering what factors might constitute threats, we must look beyond the mere exposure of the species to the factor to determine whether the species responds to the factor in a way that causes actual impacts to the species. If there is exposure to a factor, but no response, or only a positive response, that factor is not a threat. If there is exposure and the species responds negatively, the factor may be a threat and we then attempt to determine how significant a threat it is. If the threat is significant, it may drive or contribute to the risk of extinction of the species such that the species may warrant listing as an endangered or threatened species as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely impacted could suffice. The mere identification of factors that could impact a species negatively may not be sufficient to compel a finding that listing may be warranted. The information must contain evidence sufficient to suggest that these factors may be operative threats that act on the

species to the point that the species may meet the definition of an endangered or threatened species under the Act.

In making this 90-day finding, we evaluated whether information regarding threats to the prairie gray fox and the plains spotted skunk, as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

#### **Plains Spotted Skunk (*Spilogale putorius interrupta*)**

##### *A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range*

##### **Information Provided in the Petition**

The petitioners claim that threats to the plains spotted skunk include habitat loss and modification. The petition suggests that loss of grassland and early successional habitat has contributed to declining population trends of 90 to 100 percent throughout the subspecies' range (Petition, unpaginated). Plains spotted skunks require some early successional component to their habitat to provide cover and denning areas (Petition, unpaginated; Lesmeister 2007, p. 56; Lesmeister *et al.* 2009, pp. 23–24). Before European settlement, this need was satisfied by both natural disturbances (*e.g.*, fire, storms, beaver, elk, and bison) and disturbance by Native Americans (Petition, unpaginated; Sewell 2009, p. 11). Grasslands and successional habitats were prevalent across the landscape. However, anthropogenic changes lead to landscapes that were more conducive to species that need early successional habitat, such as the plains spotted skunk. Such species shifted their use from naturally created, early successional habitats to those that were created by humans, and the species now seem to depend on these human-created habitats to some extent (Petition, unpaginated; Sewell 2009, p. 12).

The petition claims that the plains spotted skunk has since declined (Petition, unpaginated; Gompper and Hackett 2005, pp. 199–200) because of changes in agriculture, silviculture, and climate. Because plains spotted skunks rely on early successional habitat, management activities or lack of management that reduce the occurrence of dense vegetative stands or modify forest structure to more open, mature stands could be detrimental to the subspecies (Petition, unpaginated; Lesmeister 2007, p. 56; Lesmeister 2009, pp. 23–24).



### Evaluation of Information Provided in the Petition and Available in Service Files

The information readily available in our files supports the petitioners' claims that the plains spotted skunk may be declining rangewide due to loss, degradation, and modification of early successional habitat. The plains spotted skunk has apparently undergone long-term fluctuations in population (Choate *et al.* 1973, pp. 228–233; Novak *et al.* 1987, pp. 223–226; Gompper and Hackett 2005, pp. 199–200). Increases in abundance in the early 1900s likely were facilitated by human presence and influence on the landscape, as were subsequent declines (Choate *et al.* 1973, pp. 228–233). Construction of houses, outbuildings, haystacks, and brush piles provided shelter, and the storage of crops provided a direct source of food, as well as an indirect food source (mice and rats that were attracted to stored grain) (Choate *et al.* 1973, p. 230). Exploitation of these novel features allowed the expansion and increase of the plains spotted skunk (Choate *et al.* 1973, p. 230). Subsequent removal of anthropogenic features, as small farms were deserted and incorporated into larger farms reduced the amount of available habitat (Choate *et al.* 1973, p. 231). However, the plains spotted skunk has declined throughout its range, not just in the parts of the range where the subspecies exists in anthropogenic landscapes. Harvest by fur trappers has consistently decreased from the mid-1940s to present (Novak *et al.* 1987, pp. 223–226). Gompper and Hackett (2005, pp. 199–200) analyzed harvest data from seven States (Iowa, Missouri, Nebraska, Kansas, Oklahoma, Minnesota, and Arkansas) in the range of the plains spotted skunk and confirmed the population decline, demonstrated that the timing of the onset of decline differed among States, and determined that the decline was not an artifact of harvest effort or pelt demand.

Although there does not appear to be a single cause of decline, a suite of potential factors are suggested consistently in the literature. The decline of small farms, the advent of agriculture practices that encourage removal of fence rows and brush piles, intensive use of pesticides, improved grain management practices, and the end of large haystack construction are implicated as potential causes for the species' decline in landscapes dominated by human activity (Choate *et al.* 1973, pp. 229–231; Gompper and Hackett 2005, p. 199). Following the Great Depression, many small farms were deserted and incorporated into

larger agricultural units. Farm buildings were removed that had provided both shelter and sources of prey, such as rodents (Choate *et al.* 1973, p. 230; Nilz and Finck 2008, pp. 19–20). This change in the agricultural landscape was intensified by the drought of 1933–1940, during which thousands of small farmers moved to other areas, abandoning many of the farms that remained. Arid conditions impacted natural riparian habitats of plains spotted skunks along watercourses, likely making them uninhabitable. The continued introduction of technology and mechanization into farming operations caused further decline of small, diverse farms and replaced them with large monocultures (Choate *et al.* 1973, p. 231). Plains spotted skunks avoid expansive open areas, such as pasture lands, that are devoid of overhead cover, and plains spotted skunks are likely intolerant of this habitat type (Lesmeister *et al.* 2009, p. 23). Finally, the widespread application of insecticides, such as Dichlorodiphenyl-trichlorethane (DDT), in industrial farming might have contributed to the decline in the 1940s. Because the plains spotted skunk is primarily an insectivore, application of pesticide likely reduced the main food source for the subspecies. Foraging opportunities were historically and continue to be further limited by dietary preference; competition with other species, such as striped skunk and weasels, for an alternate food source; or both (Kinlaw 1995, p. 4; Nilz and Finck 2008, pp. 19–20).

Habitat loss or modification might also be currently occurring in more natural forested landscapes where the plains spotted skunk occurs. In the Ouachita Mountains and Ozark Plateau, use of forested areas was limited to young forest stands with closed canopy and dense understory, areas with fallen logs and brushpiles, ravine bottoms, or stands that had undergone timber stand improvement (TSI) and had high levels of ground litter and slash (McCullough 1983, pp. 40–41; Lesmeister *et al.* 2009, p. 23). Young shortleaf pine stands were the only early successional habitat present in the Ouachita Mountains study area and were preferred over the dominant habitat type, mature shortleaf pine. Mature shortleaf pine stands offer more open canopy conditions and are considered suboptimal habitat for the plains spotted skunk compared to young stands that provide more desirable structural characteristics (Lesmeister *et al.* 2009, p. 24). Similar to the results in the Ouachita Mountains, plains spotted skunks in the Ozark Plateau preferred

young oak-hickory forest stands over mature oak-hickory forest (McCullough 1983, p. 41). Considering that the subspecies seems to require structural complexity provided by early successional habitats, management priorities that endeavor to create landscapes dominated by mature forest stands could negatively impact the plains spotted skunk. For example, such conflicts in habitat management might occur where the ranges of the red-cockaded woodpecker and plains spotted skunk are coincident. Red-cockaded woodpeckers require open, mature pine woodlands and savannahs maintained by frequent fire (USFWS 2003, p. 5). Management for red-cockaded woodpeckers focuses on restoration of pine forests to old, open stands with canopy and herbaceous layers but no hardwood midstory (USFWS 2003, pp. 2, 41). This type of pine restoration is currently occurring in Arkansas on the Ouachita National Forest (Hedrick *et al.* 2007, pp. 1–8).

In summary, we find that the information provided in the petition, as well as other information available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to historical and currently ongoing habitat loss and degradation due to modifications of early successional habitat. Further assessment of population declines due to the loss of early successional habitat caused by changes in agricultural practices, changes in silvicultural practices, and reduction in food availability by intensive use of pesticides is necessary.

### *B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

#### Information Provided in the Petition

The petitioners did not present information regarding the overutilization of the plains spotted skunk for commercial, recreational, scientific, or educational purposes.

#### Evaluation of Information Provided in the Petition and Available in Service Files

Harvest pressure on the plains spotted skunk during the 1930s has received little consideration for contributing to the decline of the subspecies, but might have been a factor historically (Nilz and Finck 2008, p. 19). Available harvest records from the 1930s to 1940s (Novak *et al.* 1987, pp. 223–226) show high harvest numbers for most States in the subspecies' range, but since the mid-1940s, harvest numbers have

consistently decreased. The population status and dynamics of plains spotted skunks during this period of heavy harvest are not fully understood, but the plains spotted skunk appears to have been common in most landscapes in the early 1900s (Choate *et al.* 1973, pp. 227–230). Based on information readily available in our files, overutilization appears to be a potential cause of historical decline, but we do not have information to indicate that the overutilization for commercial, recreational, scientific, or educational purposes is presenting an ongoing threat to the plains spotted skunk. However, as we proceed with the 12-month status review, we will further investigate this factor to determine whether overutilization for commercial, recreational, scientific, or educational purposes is an ongoing threat to the subspecies.

### C. Disease or Predation

#### Information Provided in the Petition

The petitioners did not present information regarding diseases that may affect the plains spotted skunk. The petitioners claim that the plains spotted skunk is experiencing unnaturally high levels of predation, mainly by birds of prey, because of loss of protective cover provided by early successional habitat (Petition, unpaginated). Lesmeister *et al.* (2009, pp. 23–24) observed 18 mortalities of plains spotted skunks in the Ouachita Mountains, most of which were caused by avian predators and occurred in mature shortleaf pine forests that provide little in the way of protective cover. They noted that stands of young shortleaf pine seem to be less preferred by typical predators of plains spotted skunk, such as coyote (*Canis latrans*), bobcats (*Lynx rufus*), and great horned owls (*Bubo virginianus*), which prefer more open habitats. Open conditions in mature forest stands might be more favorable for the presence of predators and consequently less favorable to plains spotted skunks (Lesmeister *et al.* 2009, p. 24).

#### Evaluation of Information Provided in the Petition and Available in Service Files

Based on our review of information provided by the petitioners and readily available in our files, the plains spotted skunk may be declining rangewide due to predation. The most common natural predators of the plains spotted skunks are owls and mesocarnivores (Kinlaw 1995, p. 4; Schwartz and Schwartz 2001, p. 329). Lesmeister *et al.* (2010, pp. 54–58) observed a relatively low survival rate for plains spotted skunk in the

Ouachita Mountains. Sixty-three percent of documented mortalities were attributed to avian predators, 26 percent to mammalian predators, and 11 percent to unknown causes. Eleven of the 12 avian-caused mortalities occurred in mature shortleaf pine stands with an open canopy and herbaceous understory, whereas all of the mammal-caused mortalities occurred in young shortleaf pine stands (Lesmeister *et al.* 2010, p. 54). These results suggest that there is a difference between the amount and source of predation that occurs in habitat that is considered optimal (young shortleaf pine) and suboptimal (mature shortleaf pine) for plains spotted skunk (Lesmeister *et al.* 2010, pp. 55–56). Plains spotted skunks avoided use of mature forest stands and selected young forest stands (Lesmeister *et al.* 2009, pp. 23–24); mortality due to predation was disproportionate to habitat use because the highest mortality occurred in the least-used mature forest habitat. While predation plays a natural role in the life history dynamics of the plains spotted skunk, there is some evidence that it may be occurring at a higher rate that could have a negative affect on populations of the species.

Diseases affecting the subspecies include pneumonia, coccidiosis, and rabies (Kinlaw 1995, p. 4). The plains spotted skunk, however, is often overrated as a carrier of rabies; fewer cases were documented in spotted skunks than in domestic cats, cattle, dogs, or striped skunks (Hazard 1982, p. 145). Viral disease, such as parvovirus, or mink enteritis virus, may contribute to localized population declines, and some viral diseases can exhibit rapid spread and long-term impacts to local population viability, but do not appear to impact the species as a whole (Gompper and Hackett 2005, p. 200). Based on information readily available in our files, disease may have been a cause of historical decline, but we do not have information to indicate that disease is presenting an ongoing threat to the plains spotted skunk. As we proceed with the 12-month status review, we will further investigate whether disease is an ongoing threat to the subspecies.

In summary, the petition and information in our files identifies excessive predation that may be occurring at a higher rate than naturally expected as a threat to the plains spotted skunk. Therefore, we find that the information provided in the petition, as well as other information readily available in our files, presents substantial scientific and commercial information to indicate that the plains

spotted skunk may warrant listing due to predation.

### D. The Inadequacy of Existing Regulatory Mechanisms

#### Information Provided in the Petition

The petitioners state that there currently is no mechanism to protect habitat or garner appropriate resources for species conservation.

#### Evaluation of Information Provided in the Petition and Available in Service Files

We do not have any information in our files to indicate whether any regulatory mechanisms that are designed to alleviate threats to the species (*i.e.*, loss of early successional habitat due to changes in agricultural practices, changes in silvicultural practices, climatic fluctuations, reduction in food availability by intensive use of pesticides, or excessive predation) exist. Therefore, we find that the petition and the information readily available in our files do not provide substantial scientific or commercial information to indicate that the inadequacy of existing regulatory mechanisms is a threat to the plains spotted skunk such that the petitioned action may be warranted. However, as we proceed with the 12-month finding status review, we will further investigate whether the inadequacy of existing regulatory mechanisms may be a threat to the plains spotted skunk.

### E. Other Natural or Manmade Factors Affecting Its Continued Existence

#### Information Provided in the Petition

Humans are reported as the main cause of mortality in less natural landscapes (Kinlaw 1995, p. 4). Death is caused by vehicle collision, poisoning, shooting, domestic dogs and cats, and trappers who target plains spotted skunks or take them incidentally when trapping for other species (Jones *et al.* 1983, p. 304; Wires and Baker 1994, p. 4). A common source of sightings for plains spotted skunks are those that are found as road kill. Of 72 total possible sightings of the plains spotted skunk within a 5-year period in Minnesota, 11 were road kills and an additional 13 were killed by the individual reporting the sighting (Wires and Baker 1994, p. 4).

#### Evaluation of Information Provided in the Petition and Available in Service Files

We do not have information in our files to indicate any potential threat to the plains spotted skunk due to other natural or manmade factors. Based on

information provided in the petition, direct human-caused mortality (e.g., vehicle collision, poisoning, shooting, domestic dogs and cats, and trapping) may be impacting individual skunks, but we do not have information to indicate that such mortality is presenting a population-level threat to the plains spotted skunk. Therefore, we find that the petition and information readily available in our files do not provide substantial scientific or commercial information to indicate that other natural or manmade factors present a threat to the plains spotted skunk such that the petitioned action may be warranted. However, as we proceed with the 12-month status review, we will further investigate whether other natural or manmade factors, such as potential impacts from climate change and direct human-caused mortality, may be a threat to the plains spotted skunk.

#### **Finding for Plains Spotted Skunk**

We reviewed the information presented in the petition and evaluated that information in relation to information readily available in our files. On the basis of our determination under section 4(b)(3)(A) of the Act, we determine that the petition does present substantial scientific or commercial information indicating that listing the plains spotted skunk as an endangered or threatened species throughout its entire range may be warranted. This finding is based on information provided under factors A and C.

Because we have found that the petition presents substantial information indicating that listing the plains spotted skunk may be warranted, we are initiating a status review to determine whether listing the plains spotted skunk as an endangered or threatened species under the Act is warranted.

The “substantial information” standard for a 90-day finding differs from the Act’s “best scientific and commercial data” standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act’s standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

#### **Prairie Gray Fox (*Urocyon cinereoargenteus ocythous*)**

##### *A. The Present or Threatened Destruction, Modification, or Curtailment of Its Habitat or Range*

##### Information Provided in the Petition

The petitioners claim that habitat loss and modification are threats to the prairie gray fox. The petitioners state that the gray fox requires early successional cover, grassland, or dense forest, and that the decline of this habitat within the range of this subspecies has contributed to its decline (Petition, unpaginated). The gray fox’s use of deciduous or pine woody habitat is well established in the literature (Chamberlain and Leopold 2000, p. 749; Jones *et al.* 1985, p. 264; Haroldson and Fritzell 1984, p. 226; Fritzell and Haroldson 1982, p. 4). Cooper (2008, p. 24) reported a lower relative abundance of gray fox for Illinois counties where agricultural patches were larger and occurred in a wider variety of shapes and sizes. Conversely, Cooper (2008, pp. 24–25) reported higher relative abundances of gray fox in Illinois counties that contained a greater availability of grassland dispersed into the landscape, with forest patch size highly variable and closer together. Haroldson and Fritzell (1984, p. 226) found that gray fox relied heavily on forested habitats in Missouri. They found that gray fox used dense stands of young trees during the day, stating that “dense protective cover is characteristic of the diurnal retreats of gray fox throughout their range” (Haroldson and Fritzell 1984, p. 227; Petition, unpaginated). The petitioners indicate that habitat important to the gray fox, such as early successional cover, grassland, or dense forest, are in decline (Petition, unpaginated; Gillen 2011). Gillen (2011, p. 9) evaluated the relationship of mast-producing trees (trees that produce acorns or nuts), small mammal densities, and the occurrence of carnivores in forests in southern Illinois and hypothesized that the decline of oak-dominated forests in the eastern United States may cause declines in small mammals that consume acorns, and in turn the carnivores that consume small mammals. Gillen (2011, p. 1) cited several studies that indicate oak-dominated forests are declining due to the reduced regeneration and secondary succession of shade-tolerant species such as maple and beech. Gillen (2011, p. 9) cited studies by Haroldson and Fritzell (1984, p. 226) that found that gray fox select forests with high densities of prey. Gillen (2011, p. 10)

reported a decrease in red and gray fox populations in Illinois, and hypothesized that the decline may be worsened by additional succession of oak-dominated forests.

##### Evaluation of Information Provided in the Petition and Available in Service Files

The petitioners assert that the gray fox requires early successional cover, grassland, or dense forest and that the decline of this habitat type has contributed to the subspecies decline (Petition, unpaginated). Gray fox prefer wooded habitat, areas of mixed grassland and forest, and early successional areas (Cooper 2008, p. 4; Chamberlain and Leopold 2000, p. 749; Haroldson and Fritzell 1984, p. 226; Fritzell and Haroldson 1982, p. 4). Gray fox utilize this dense protective cover especially during the day when they are not as active (Haroldson and Fritzell 1984, p. 227). There is evidence that gray fox are more abundant in areas where there is woody or dense cover and less abundant in agricultural areas (Cooper 2008, p. 4). Cooper (2008, p. 26) suggests that habitat loss is one of the gray fox’s biggest threats and that the changes in the landscape, predominantly to agriculture in the Midwest, have adversely affected gray fox populations. The petitioners have provided evidence of low or declining numbers of gray fox within the range of the prairie gray fox subspecies (Blair 2011, p. 31; Roberts and Clark 2011, unpaginated; Sasse 2011, unpaginated; Kitchell 2010, unpaginated; U.S. Department of the Interior 1981, pp. 38–98; U.S. Department of the Interior 1980, pp. 40–100). The conversion from native woody habitat to agricultural practices has likely impacted the prairie gray fox as all of the States within its range have agriculture to differing degrees. When settlers arrived in the Midwest, the forests were converted to agriculture before the technology was available to convert prairie lands (U.S. Geological Survey 1998, p. 4). For example, prior to 1860, forest areas were the primary source of cropland in Illinois (U.S. Geological Survey 1998, p. 4). Due to the conversion to agriculture, timber harvest, and development, approximately 70 percent of the available forest land in the Midwest has been lost since 1920 (U.S. Geological Survey 1998, p. 4), and landcover in the Midwest consists of approximately 44 percent agriculture (Mankin and Warner 1999a, p. 956). Although the petitioners do not provide information on the amount of habitat that has been lost throughout the prairie gray fox’s range, we believe there is substantial

information to suggest that a decline in the population of this subspecies may be due to the loss of habitat.

In summary, we find that the information provided in the petition, as well as other information available in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to the loss of early successional cover, grassland, or dense forest habitat within the range of this subspecies.

#### *B. Overutilization for Commercial, Recreational, Scientific, or Educational Purposes*

##### Information Provided in the Petition

The petitioners state that the threats of continued human hunting and trapping of this subspecies is “an additional stressor” but do not provide information as to the numbers of gray fox being harvested in any of the States within the range of the prairie gray fox (Petition, unpaginated).

##### Evaluation of Information Provided in the Petition and Available in Service Files

Fritzel and Haroldson (1984, p. 4) state that “undoubtedly the most important predator of gray fox is man,” referencing specific citations indicating the importance of gray fox pelts in the 1970s. An estimated 26,109 gray fox pelts were harvested in the United States during the 1970–1971 season, increasing to 163,458 during the 1975–1976 season. It was estimated in 1977 that approximately half of the gray fox population in Wisconsin was harvested annually (Fritzel and Haroldson 1984, p. 4). Illinois hunters harvested 9,086 gray fox pelts in the winter of 1977–1978 (McFarland 2007, p. 9). More recently, during the 2010–2011 season, gray fox harvested in the State of Missouri increased 112 percent, while the annual Archer’s Index to Furbearer Populations (where deer and turkey archery hunters record sightings of furbearers each fall) shows a 75 percent decline in gray fox numbers since 1983 (Petition, unpaginated; Missouri Department of Conservation 2011 Furbearer Program Annual Report, pp. 11–12; Blair 2011, p. 31). According to the Arkansas Game and Fish Commission 2010–2011 Furbearing Animal Report, 976 gray fox were purchased by licensed fur buyers in the State (Sasse 2011, unpaginated). The report indicates that there was an overall increase in pelts purchased for this season after an overall low in 2009–2010, with the number of pelts purchased increasing by 91 percent. The report also indicates actual numbers of

furbearers harvested is likely underreported.

Although there is evidence in the literature that gray fox have been hunted in the past and continue to be harvested to some degree, which may have individual and localized impacts, neither the petition nor information readily available in our files indicates that harvest is affecting the subspecies overall. Therefore, based on information readily available in our files, overutilization may have occurred and may have potentially caused historical decline, but neither the petition nor the information readily available in our files indicate that the overutilization for commercial, recreational, scientific, or educational purposes is a current threat to the prairie gray fox. However, as we proceed with the 12-month status review, we will further investigate this factor to determine whether overutilization for commercial, recreational, scientific, or educational purposes is an ongoing threat to the subspecies.

#### *C. Disease or Predation*

##### Information Provided in the Petition

The petitioners did not present information regarding disease affecting the prairie gray fox. The petitioners claim that the loss of dense cover available to the prairie gray fox due to habitat degradation has made the subspecies more susceptible to predation from coyotes (*Canis latrans*), stating coyotes are the gray fox’s only major non-human predator (Petition, unpaginated). The petitioners cite a personal communication with Stan Gehrt from Ohio State University asserting that gray fox in northern Illinois are being “wiped out” due to coyote predation because they do not have adequate cover (Petition, unpaginated). The petition states that Gehrt cited additional research suggesting that coyote killed gray fox; however, they did not consume them (Petition, unpaginated). The petitioners cite McFarland (2007), which discusses studies being conducted in Illinois on coyote-gray fox interactions in northern and southern Illinois, with Gehrt cited as one of the researchers. McFarland (2007, p. 11) quotes Gehrt in reference to the study: “We identified a family of gray foxes living in a cemetery in an intensely urban area on the south side of Chicago, the amazing thing is, it was a place nobody would expect to find even a red fox. On top of that, coyotes still found their hiding spot and killed them.” In McFarland (2007, p. 11), Gehrt suggests that gray fox have been unable to adapt to the increase in coyote

predation like red fox have. McFarland (2007, p. 11) indicates that the increase in coyote numbers in Illinois may be due to a shift in agricultural practices and movement of humans to urban areas, and a subsequent decrease in coyote hunters and an increase in the coyote’s food supply.

##### Evaluation of Information Provided in the Petition and Available in Service Files

Jones *et al.* (1985, p. 264) and Fritzell and Haroldson (1982, p. 5) both mention coyote and bobcat (*Lynx rufus*) as a predator of the gray fox. In their study of coyote, fox, and bobcat interactions in California, Fedriani *et al.* (2000, p. 262) predicted the dominance of coyote over the other two carnivores. During their 2-year study, Fedriani *et al.* (2000, p. 262) found 7 gray fox killed by coyote and 2 by bobcat, and found remains of gray fox in coyote feces. They suggested that “the sum of population losses due to coyote predation plus the avoidance of areas of high coyote predation risk by fox limit the size and range of gray fox populations in the Santa Monica Mountains, whereas no evidence of food limitation is indicated” (Fedriani *et al.* 2000, p. 268). Chamberlain and Leopold (2005, pp. 171–178) studied similar interactions among bobcat, coyote, and gray fox in central Mississippi. They found that the home ranges of coyote and gray fox intersected and that gray fox maintained home ranges within the larger range of the coyote (Chamberlain and Leopold 2005, p. 175). However, they found that the amount of overlap of core areas was negligible, suggesting that gray fox avoid areas of greater coyote concentration. They considered the interspecific competition between coyotes and gray fox minimal, as there were 2 deaths of gray fox from coyotes (of the 37 gray fox studied). Researchers also indicated there were two instances of den abandonment due to coyote disturbance (Chamberlain and Leopold 2005, p. 177). The coyote’s range in the United States has expanded dramatically since pre-settlement; however it has always been a part of the prairie gray fox’s range (Parker 1995, p. 17). Before the 1900s, coyote was limited to the prairies of the central United States from Canada south into Mexico (Parker 1995, p. 17). Although the available information shows that coyote and bobcat do prey on gray fox, it does not indicate whether the predation rate has increased beyond a natural level or that such predation is causing a population-level effect.

We found few sources in our files referencing the effects of disease on gray fox populations. Fritzell and Haroldson

(1982, p. 5) state that canine distemper virus (CDV) and rabies may affect local populations. Cooper 2008 (p. 1) also mentions that rabies, canine parvovirus, and CDV affect the gray fox. Cooper 2008 (p. 1) also states that CDV is, "the most significant mortality factor for gray foxes," citing several references supporting the adverse effects CDV has had on gray fox populations.

The information provided by the petitioners and within our files indicates that the gray fox is being preyed on by coyotes and, to a lesser degree, bobcats; however, we do not have information as to whether the predation rate has increased beyond a natural level. Our files also contain some information that the impacts of disease may be detrimental to individual populations of the prairie gray fox, but we do not have information as to what impact disease is having on the subspecies.

Therefore, based on information readily available in our files, gray fox are currently being preyed on by coyotes, but we do not have information to indicate that disease or predation is an ongoing threat to the prairie gray fox. As we proceed with the 12-month status review, we will further investigate whether disease or predation are an ongoing threat to the subspecies.

#### *D. The Inadequacy of Existing Regulatory Mechanisms*

##### Information Provided in the Petition

No information on this factor is provided in the petition.

##### Evaluation of Information Provided in the Petition and Available in Service Files

We do not have any information in our files to indicate the amount of protection currently being afforded the prairie gray fox within individual States. Therefore, we find that the petition and the information readily available in our files do not provide substantial scientific or commercial

information to indicate that the inadequacy of existing regulatory mechanisms is a threat to the prairie gray fox such that the petitioned action may be warranted. However, as we proceed with the 12-month status review, we will further investigate whether the inadequacy of existing regulatory mechanisms may be a threat to the prairie gray fox.

#### *E. Other Natural or Manmade Factors Affecting Its Continued Existence*

##### Information Provided in the Petition

The petitioners did not present information on whether or how other natural or manmade factors are affecting the prairie gray fox.

##### Evaluation of Information Provided in the Petition and Available in Service Files

We do not have information in our files to indicate any potential threat to the prairie gray fox due to other natural or manmade factors. Therefore, we find that the petition and information readily available in our files do not provide substantial scientific or commercial information to indicate that other natural or manmade factors present a threat to the prairie gray fox such that the petitioned action may be warranted. However, as we proceed with the 12-month status review, we will further investigate whether other natural or manmade factors, such as potential impacts from climate change, may be a threat to the prairie gray fox.

#### **Finding for Prairie Gray Fox**

We reviewed the information presented in the petition and evaluated that information in relation to information readily available in our files. On the basis of our determination under section 4(b)(3)(A) of the Act, we determine that the petition does present substantial scientific or commercial information indicating that listing the prairie gray fox throughout its entire range may be warranted. This finding is

based on information provided under factor A.

Because we have found that the petition presents substantial information indicating that listing the prairie gray fox may be warranted, we are initiating a status review to determine whether listing the prairie gray fox under the Act is warranted.

The "substantial information" standard for a 90-day finding differs from the Act's "best scientific and commercial data" standard that applies to a status review to determine whether a petitioned action is warranted. A 90-day finding does not constitute a status review under the Act. In a 12-month finding, we will determine whether a petitioned action is warranted after we have completed a thorough status review of the species, which is conducted following a substantial 90-day finding. Because the Act's standards for 90-day and 12-month findings are different, as described above, a substantial 90-day finding does not mean that the 12-month finding will result in a warranted finding.

#### **References Cited**

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Rock Island, Illinois Ecological Service Field Office (see **FOR FURTHER INFORMATION CONTACT**).

#### **Authors**

The primary authors of this notice are the staff members of the Columbia, Missouri, and Rock Island, Illinois Ecological Services Field Offices.

#### **Authority**

The authority for this action is the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: November 20 2012.

#### **Rowan Gould,**

*Director, U.S. Fish and Wildlife Service.*

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