

**Conclusion:** Although disease resistance or tolerance may be important to the long-term viability of *Oncorhynchus nerka* at some scale, the relevant question for this finding is whether the Lake Sammamish kokanee population is significant to the taxon as a whole (*i.e.*, all *O. nerka* populations and life history forms throughout the range of the species). Given that there is no evidence indicating that the Lake Sammamish kokanee are disease resistant or disease tolerant, and that we were unable to find any information on IHN presence in other lakes containing *O. nerka* populations in order to determine whether Lake Sammamish is atypical, we conclude that the hypothesized disease resistance or tolerance of the Lake Sammamish kokanee population does not meet the significance element of the DPS policy.

(B) Multiple run spawning timings: Multiple run timings allow kokanee and other salmonid populations the ability to exploit a range of available habitats and reduce risks to extirpation (*e.g.*, stochastic events, predation, variable climate) by diversifying spawning distribution over space and time. The Lake Sammamish/Lake Washington kokanee population historically had at least three distinct run timings expressed in different locations within the basin. The expression of multiple-run timings within populations appears to be rare across the range of kokanee, especially among tributaries (Wood 2009, pers comm.), although there are at least a few other kokanee populations that are known to exhibit this trait (Shepard 1999). In addition, the literature indicates that other kokanee populations have run timings that occur during similar times of the year as do the run timings of the Lake Sammamish kokanee (Scott and Crossman 1973, p. 167). With regard to the taxon-wide examination, NOAAF (1997, p. 20) states that *Oncorhynchus nerka* exhibits the greatest diversity in selection of spawning habitat among the Pacific salmon, and great variation in river entry timing and the duration of holding in lakes prior to spawning. Bimodal run timing (two spawning runs in a single season) for *O. nerka* populations have been demonstrated in the Russian River in Alaska (Nelson 1979, p. 3), the Klukshu River, Yukon Territory (Fillatre *et al.* 2003, p. 1), and Karluk Lake on Kodiak Island, Alaska (Schmidt *et al.* 1998, p. 744).

**Conclusion:** Under the DPS policy, we are required to evaluate the Lake Sammamish kokanee population segment's significance relative to the taxon as a whole. Therefore, given the available information on the number of

*O. nerka* populations across the range of the species (see sockeye and kokanee abundance trends above), and the presence of bimodal run timing in other populations, we conclude the presence of multiple run timings in Lake Sammamish is not significant to the taxon.

#### DPS Conclusion

On the basis of the best available information, we conclude that the Lake Sammamish kokanee population segment is discrete due to marked separation as a consequence of physical, ecological, physiological, or behavioral factors according to the 1996 DPS policy. However, on the basis of the four significance elements in the 1996 DPS policy, we conclude this discrete population segment is not significant to the remainder of the taxon and therefore, does not qualify as a DPS under our 1996 DPS policy. As such, we find the Lake Sammamish kokanee population is not a listable entity under the Act.

#### Finding

In making this finding, we considered information provided by the petitioners, as well as other information available to us concerning the Lake Sammamish kokanee population. We have carefully assessed the best scientific and commercial information available regarding the status and threats to the Lake Sammamish kokanee population. We reviewed the petition and unpublished scientific and commercial information. We also consulted with Federal and State land managers, and scientists having expertise with *Oncorhynchus nerka*. This 12-month finding reflects and incorporates information received from the public following our 90-day finding or obtained through consultation or literature research.

On the basis of that review, we have determined that the Lake Sammamish kokanee does not meet the elements of our 1996 DPS policy as being a valid DPS. Consequently, we find the Lake Sammamish kokanee population is not a listable entity under the Act, and that listing is not warranted.

#### References

A complete list of all references cited is available at <http://www.regulations.gov>, or upon request from the Washington Fish and Wildlife Office (see ADDRESSES).

#### Author

The primary authors of this document are staff of Region 1, Pacific Region, U.S. Fish and Wildlife Service.

#### Authority

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

Dated: September 23, 2011.

**Rowan W. Gould,**

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

[FR Doc. 2011-25595 Filed 10-3-11; 8:45 am]

BILLING CODE 4310-55-P

## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS-R3-ES-2010-0034; MO 92210-0-0008]

#### Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List *Calopogon oklahomensis* as Threatened or Endangered

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

**ACTION:** Notice of 12-month petition finding.

**SUMMARY:** We, the U.S. Fish and Wildlife Service, announce a 12-month finding on a petition to list *Calopogon oklahomensis* (Oklahoma grass pink orchid) under the Endangered Species Act of 1973, as amended. After review of the best available scientific and commercial information, we find that listing *Calopogon oklahomensis* is not warranted at this time. However, we ask the public to submit to us any new information that becomes available concerning the threats to *Calopogon oklahomensis* or its habitat at any time.

**DATES:** The finding announced in this document was made on October 4, 2011.

**ADDRESSES:** This finding is available on the Internet at <http://www.regulations.gov> at Docket Number FWS-R3-ES-2010-0034. Supporting documentation used in preparing this finding is available for public inspection, by appointment, during normal business hours at the U.S. Fish and Wildlife Service, Chicago, Illinois Ecological Services Field Office, 1250 South Grove, Suite 103, Barrington, IL 60010. Please submit any new information, materials, comments, or questions concerning this finding to the above address.

**FOR FURTHER INFORMATION CONTACT:** Ms. Louise Clemency, Field Supervisor, Chicago, Illinois Ecological Services Field Office (see ADDRESSES); by telephone at 847-381-2253; or by facsimile at 847-381-2285. Persons who

use a telecommunications device for the deaf (TDD) may call the Federal Information Relay Service (FIRS) at 800-877-8339.

#### SUPPLEMENTARY INFORMATION:

##### Background

Section 4(b)(3)(B) of the Act (16 U.S.C. 1531 *et seq.*), requires that, for any petition to revise the Federal Lists of Endangered and Threatened Wildlife and Plants that contains substantial scientific or commercial information that listing the species may be warranted, we make a finding within 12 months of the date of receipt of the petition. In this finding, we will determine that the petitioned action is: (1) Not warranted, (2) warranted, or (3) warranted, but the immediate proposal of a regulation implementing the petitioned action is precluded by other pending proposals to determine whether species are threatened or endangered, and expeditious progress is being made to add or remove qualified species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Section 4(b)(3)(C) of the Act requires that we treat a petition for which the requested action is found to be warranted but precluded as though resubmitted on the date of such finding, that is, requiring a subsequent finding to be made within 12 months. We must publish these 12-month findings in the **Federal Register**.

##### Previous Federal Actions

On May 28, 2008, we received a petition dated May 22, 2008, from Dr. Douglas Goldman of the Harvard University Herbaria requesting that *Calopogon oklahomensis* be listed as threatened or endangered under the Act. Included in the petition was supporting information regarding the species' taxonomy and ecology, historical and current distribution, present status, and actual and potential causes of decline. We acknowledged the receipt of the petition in a letter to Dr. Douglas Goldman, dated September 15, 2008. In that letter we also stated that due to funding constraints in fiscal year 2008, we would not be able to begin processing the petition at that time.

Funding became available in fiscal year 2010, wherein work began on the 90-day finding. The 90-day finding was published on August 24, 2010 (75 FR 51969). This notice constitutes the 12-month finding on the May 22, 2008, petition to list *Calopogon oklahomensis* as threatened or endangered.

##### Species Information

###### Taxonomy and Species Description

*Calopogon oklahomensis*, commonly known as the Oklahoma grass pink or prairie grass pink, is a terrestrial species of orchid (family Orchidaceae) native to the United States and primarily occurring in the south-central United States. It is a member of the genus *Calopogon*, a group of terrestrial orchids known as grass pinks.

The number of species identified as belonging to the genus *Calopogon* has varied since the genus was identified by Linnaeus in 1753 (Correll 1978, p. 167). The first species of the current genus *Calopogon*, was identified by Linnaeus as *Limodorum tuberosum* in 1753 (Correll 1978, p. 167). In 1788, Walter originally identified *Ophrys barbata*, with Ames (1908) later changing the name to *Calopogon barbatus*, which was subsequently accepted and conserved (Correll, 1978, p. 167). *Calopogon multiflorus* was first described by Lindley in 1840 (Correll 1978, p. 169). In 1860, Chapman identified and described *Calopogon pallidus* (Correll 1978, p. 171). By 1888, *Limodorum tuberosum* was accepted and given the conserved name of *Calopogon tuberosus* (L.) by Britton, Sterns, and Poggenburg (Jarvis and Cribb 2009, p. 368). In 1933, Small (pp. 363–399) recognized six species of *Calopogon* based on minor variations, which Correll (1978, p. 167) believed were difficult to interpret. By 1950, Correll, taking a more conservative approach, recognized four species of *Calopogon*: *C. barbatus*, *C. multiflorus*, *C. pallidus*, and *C. pulchellus*, with two variants of *C. pulchellus*, the more northern variant, *latifolius*, and the more southern variant, *simpsonii* Ames (1904) (Correll 1978, pp. 167–176). The former species, *C. pulchellus*, is now considered a variant of *C. tuberosus*, that being, *C. tuberosus* var. *tuberosus*. By 1989, it was recognized that *Calopogon tuberosus* encompassed two variants, variant *simpsonii* (southern variant) and variant *tuberosus* (northern variant). The four species, *C. barbatus*, *C. multiflorus*, *C. pallidus*, and *C. tuberosus*, were thought to compose the genus *Calopogon* until Goldman (1995, p. 37) proposed a fifth species, *C. oklahomensis*.

Goldman (1995, p. 41) asserts that morphological and phenological variation of the genus *Calopogon* in the midwestern States was not previously recognized by Correll (1978) or Luer (1975) (Goldman 1995, p. 41) and that while examining herbarium specimens from eastern Texas, western Louisiana, and northward to central Missouri, he

(Dr. Douglas Goldman) observed several morphological and ecological characteristics, which he believed were inconsistent with true *C. tuberosus* or *C. barbatus*. These characteristics included corm (a modified underground stem) shape and formation, average leaf width, leaf length verses inflorescence (a branching stem with flowers) length, bud characterization, anthesis (the period from flowering to fruiting), floral fragrance, dorsal sepal description, lateral sepal description, distal portion of labellum disc (portion of the lower petal that is attached to the center of the flower), and stigma (where deposited pollen germinates) characteristics (Table 1) (Goldman 1995, pp. 37–39). In addition, although *C. oklahomensis* may occur in close geographic proximity to *C. tuberosus*, they are temporally isolated, as *C. oklahomensis* flowers at different times of the year than *C. tuberosus* (Goldman 1995, p. 40). In Missouri, *C. oklahomensis* blooms from early May to June, whereas *C. tuberosus* blooms from mid-June to early July (Summers 1987 in Goldman 1995, p. 40). Goldman (1995, p. 40) ascertained from herbarium label data that in eastern Texas and western Louisiana, *C. oklahomensis* blooms from March to early May, whereas *C. tuberosus* blooms from May to June. *Calopogon oklahomensis* was subsequently described, by Goldman, as unique and distinct from all other species of *Calopogon*, with a large geographic range, many consistent morphological features, and temporal isolation from its occasional associate, *Calopogon tuberosus* (Goldman 1995, p. 41).

In addition to timing of flower emergence and a suite of morphological features differing from *Calopogon tuberosus* and *C. barbatus*, *C. oklahomensis* has been shown to have unique genetic characteristics. Genetic analysis has shown *C. oklahomensis* to be hexaploid (having six sets of chromosomes), where all other taxa within *Calopogon* are diploid (consisting of two sets of chromosomes), suggesting that this species may be an allopolyploid (number of chromosomes is doubled in the hybrid), possibly derived from ancient hybridization between *C. barbatus* and *C. tuberosus* (Goldman 2000, p. 79). Recent genetic analyses by Goldman *et al.* (2004a, p. 719), however, concluded that if hybrid in origin, the cross is ancient, and it may be prudent to conclude that the origin and affinities of *C. oklahomensis* remain uncertain (Goldman *et al.* 2004a, p. 719). Trapnell *et al.* (2004, p. 314) conducted additional genetic testing for genetic variation among the five species of the

terrestrial orchid genus *Calopogon*, with results indicating that *C. oklahomensis* is the most genetically diverse species of the five species tested.

The review of *Calopogon oklahomensis* is complete, and the name is accepted by Govaerts (1999) and Govaerts (2003). Recognition of *C. oklahomensis* as the fifth *Calopogon* species was affirmed in Flora of North America (Goldman 2002, pp. 601–602), and reaffirmed by Brown (2006, p. 21; 2008, p. 177), who describes the genus *Calopogon* as being composed of five species: *C. barbatus*, *C. multiflorus*, *C. pallidus*, *C. tuberosus*, and *C. oklahomensis* (Brown 2006, p. 21). Currently, Govaerts *et al.* (2011, entire) and Kartesz (2011, in press) also recognize *C. oklahomensis* as a distinct species.

For these reasons, we accept the characterization of *Calopogon oklahomensis* as a distinct species of *Calopogon*, with a large geographic range, many consistent morphological features, temporal isolation in flower timing from other species in the genus *Calopogon*, and genetic differentiation

from all other *Calopogon* (Brown 2006, p. 22; Goldman 1995, p. 41; Goldman 2002, pp. 601–602), and, therefore, a listable entity under the Act.

*Calopogon oklahomensis* is a terrestrial plant growing (6 to 14 inches (in) (15 to 36 centimeters (cm)) tall (Brown 2006, p. 22). It has a forked corm, with the new corm at the base of the leaf and the inflorescence rapidly growing distally at the time of anthesis (Goldman 1995, p. 39). It has one or two leaves, which are lanceolate, slender, and 0.2 to 0.6 in (0.5 to 1.5 cm) wide by 3 to 14 in (7 to 35 cm) long (Brown 2006, p. 22; Goldman 1995, p. 37). The leaf is almost always as long as or longer than the inflorescence (Goldman 1995, p. 39). The flower buds are deeply grooved longitudinally, waxy, and shiny with elongated acuminate apices (narrowing to a point at the tip). The flower has three to seven non-resupinate flowers (labellum is uppermost) that are fragrant (smelling of citronella) and open simultaneously, with the color being highly variable, from lilac blue to bright magenta pink or, in the form albiflorus, white. All have a golden crest

on the lip (Brown 2006, p. 22; Goldman 1995, p. 39). The labellum disk is pinkish with a basal region of short to long yellow hairs, above which there is a triangular region of short, stout, pinkish hairs, which extend to the labellum apex (terminal end of the lower petal) (Goldman 1995, p. 39).

*Calopogon oklahomensis* has a winged column with two soft pollinia (a mass of pollen grains) (Goldman 2000, p. 3). The stigma is flat against the column surface (Goldman 1995, p. 40), and the species blooms April throughout May or June (Brown 2006, p. 22). *Calopogon oklahomensis* flowers produce little or no nectar and offer no pollen reward; they attract pollinators using showy yellow and pink lip hairs that resemble a mass of pollen. When an insect lands on the labellum, if it is heavy enough, the labellum swings down and the insect's posterior comes into contact with the sticky pollinia located on the end of the column (Trapnell *et al.* 2004, p. 308). The tiny, dustlike seeds are wind dispersed (Trapnell *et al.* 2004, p. 308).

TABLE 1—COMPARISON OF 11 CHARACTERS USED TO DISTINGUISH CALOPOGON OKLAHOMENSIS FROM C. TUBEROSUS AND C. BARBATUS, OBTAINED FROM GOLDMAN'S PERSONAL OBSERVATIONS, CORRELL (1978), AND LUER (1972, 1975) (GOLDMAN 1995, P. 39)

Character	<i>Calopogon oklahomensis</i>	<i>Calopogon tuberosus</i>	<i>Calopogon barbatus</i>
Corm .....	Forked .....	Spherical .....	Spherical.
New corm forming distally at anthesis.	Yes .....	No .....	No.
Average leaf width (range)* .....	7 mm (0.28 inches) (5–15 mm (0.20–0.59 inches)).	(10 mm (0.39 inches) (4–37 mm (0.16–1.46 inches))).	2 mm (0.08 inches) (1–4 mm (0.04–0.16 inches)).
Leaf length vs. inflorescence length.	About equal .....	Usually shorter .....	Shorter.
Buds .....	Grooved longitudinally, acuminate, very waxy.	Generally smooth, acute or apiculate, waxy.	Smooth, acute or apiculate, waxy.
Anthesis .....	Flowers open in rapid succession	Flowers open in slow succession	Flowers open in rapid succession.
Floral fragrance .....	Yes .....	No .....	No.
Dorsal sepal* .....	Lanceolate, average 19 mm × 6 mm (0.75 inches × 0.24 inches), straight to reflexed backwards.	Oblong-elliptical, average 22 mm × 8 mm (0.87 inches × 0.31 inches), straight.	Oblong-elliptical, average 16 mm × 5 mm (0.63 inches × 0.20 inches), straight to reflexed backwards.
Lateral sepals* .....	Acuminate, grooved longitudinally, recurved backwards.	Apiculate, smooth, straight .....	Apiculate, longitudinally grooved, recurved backwards.
Distal portion of labellum disc .....	Same color as most of flower, triangular region of short, pink hairs.	White, generally circular region of short, white, yellow, or orange hairs.	Same color as most of flower, triangular, region of short, pink hairs.
Stigma .....	Flat against column surface .....	Most often perpendicular to column surface.	Flat against column surface.

\* Based on 60 herbarium specimens of *Calopogon oklahomensis*, 60 specimens of *C. tuberosus*, and 30 specimens of *C. barbatus*, collected throughout the geographic range of each species.

Distribution and Population Status

*Calopogon oklahomensis* was originally thought to be restricted to the prairies of the south-central States; however, herbarium specimens (Goldman 1995, pp. 37, 40–41) indicate that it was previously much more widespread (Brown 2006, p. 22).

Goldman (1995, p. 41) based his description of the species' range on collected specimens in six States (Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas), and hypothesized that overall, the historical range covered 17 States (Alabama, Arkansas, Florida, Georgia, Iowa, Illinois, Indiana, Kansas, Louisiana,

Minnesota, Mississippi, Missouri, Oklahoma, South Carolina, Tennessee, Texas, and Wisconsin) (Goldman 2008a, pp. 2–3). Brown (2006, p. 22) identifies the historical range of *C. oklahomensis* as occurring in only 10 States (Arkansas, Illinois, Iowa, Kansas, Louisiana, Minnesota, Missouri, Oklahoma, Texas, and Wisconsin) and does not list this

species as occurring in Florida, South Carolina, Georgia, Alabama, Indiana, Tennessee, or Mississippi. NatureServe (2011) identifies the historical range of the species in 14 States (Alabama, Arkansas, Illinois, Iowa, Indiana, Kansas, Louisiana, Minnesota, Mississippi, Missouri, Oklahoma, Tennessee, Texas, and Wisconsin);

however, the source of this information is also Goldman (2008a). Goldman (2008a, pp. 2–3) states that there are 233 historical occurrences from 17 States (Table 2). A thorough review of the available information on the distribution of *Calopogon oklahomensis*, however, indicates that there are 86 to 90 historical occurrences of *C. oklahomensis* from 11 States

(Arkansas, Illinois, Iowa, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, Texas, and Wisconsin (Table 2). This 11-State historical range, which is based on a review of actual occurrences rather than the generalized range discussion presented above, is what we used in conducting our assessment of the species' status.

TABLE 2—A COMPARISON OF INFORMATION ON HISTORICAL AND EXTANT OCCURRENCES OF CALOPOGON OKLAHOMENSIS, BASED ON GOLDMAN'S (2008b, P. 3) REVIEW OF HERBARIUM SPECIMENS AS PROVIDED IN THE PETITION AND INFORMATION AVAILABLE TO THE SERVICE, PRIMARILY FROM STATE DATABASES

State	Last observed (Goldman)	Number of historical records (Goldman)	Number of historical records (based on State databases)	Estimated extant populations (Goldman)	Estimated extant populations (based on State databases)
AL *	1887	5	0	0	0
AR	1995	22	25	3 to 5	17
FL *	1882	1	0	0	0
GA *	1943	1	0	0	0
IA	1941	8	3 to 6	0	0
IL	2006?	42	7	1	2
IN *	1933	15	0	0	0
KS	1980	1	1	0	0
LA	1996	22	3	3 to 6	0
MN *	1884	5	0	0	0
MO	1994	16	2	4 to 6	11
MS	2006	4	1	2 to 3	3
OK	2004	53	24	10?	6
SC *	?	1	0	0	0
TN	1939	2	1	0	0
TX	2004	27	12 to 13	1 to 3	1
WI	1987	8	7?	1	1
Total		233	86 to 90	25 to 35	41

\* The Service does not consider these States to be within the historical range for the species.

The historical range suggested by Goldman (2008a, p. 6) includes the States of Florida and Georgia. Goldman (2008a, p. 6) describes one historical herbarium specimen of *Calopogon oklahomensis* from Florida, dated 1882 and labeled only as "Florida" for the locality. He hypothesizes that it may have been collected from the western Florida panhandle (Goldman 2008a, p. 6). This record is questionable because Florida has no other information or records regarding historical or extant occurrences of *C. oklahomensis* in the State (Brown 2011, pers. comm.; Johnson 2011, pers. comm.; Knight 2009, pers. comm.; Halupa 2009, pers. comm.). Based on the lack of records, we believe this species is not a component of the Florida flora and, therefore, do not include Florida in the range for this species.

Goldman (2008a, p. 6) states that one specimen of *Calopogon oklahomensis* was collected in southwestern Georgia by Robert Thorne in 1947. As in the case of Florida, because we have no other historical or extant records of *C.*

*oklahomensis* as occurring in Georgia (Pattavina 2009, pers. comm.), we do not include Georgia in the range of *C. oklahomensis*.

There are no confirmed specimens from South Carolina for this species (Holling 2011, pers. comm.; Pittman 2011, pers. comm.); however, there is one specimen (probably over 200 years old) housed at the herbarium at the Royal Botanic Gardens, Kew, which is marked simply as "S.C.," but without information on collector, locality, or date (Goldman 2010, pers. comm.). We do not include South Carolina in the current or historical range of *Calopogon oklahomensis* because we have no other information of *C. oklahomensis* as occurring in South Carolina (Holling 2011, pers. comm.).

We do not have comprehensive survey information for *Calopogon oklahomensis*. Therefore, we do not know the full extent of the species' distribution or if the distribution has changed over time. The following paragraphs outline the distribution and status information that is available.

Goldman (2008a, p. 3) estimates 25 to 35 extant *Calopogon oklahomensis* populations from 8 States (Arkansas, Illinois, Louisiana, Missouri, Mississippi, Oklahoma, Texas, and Wisconsin) (Table 2). The Service cannot confirm Goldman's information regarding extant populations of *C. oklahomensis* in Louisiana. The Service has information from Goldman's personal collection data (provided as supplemental information to the petition (Goldman 2008b)) of three specimens from Louisiana dated 1995 to 1996. More recent information, however, is not available regarding the sites from where these specimens originated.

Alabama has no extant occurrences of *Calopogon oklahomensis* (Everson 2009, pers. comm.; Schotz 2011, pers. comm.). Goldman (2008a, p. 5) asserts that this species was collected in Alabama a handful of times in the late 1800s, near the town of Mount Vernon, but over a few visits to this area in the last 10 years, the species has not been found, even under favorable conditions.

Arkansas has 25 documented historical occurrences of *Calopogon oklahomensis*, of these, 17 are extant populations (Witsell 2009, pers. comm.).

Illinois has seven historical specimens, which perhaps were originally misidentified as *Calopogon pulchellus* and *C. tuberosus*, then, in 1999, determined to be *C. oklahomensis* by Goldman (Phillippe 2010, pers. comm.). Currently, Illinois has two extant populations of *C. oklahomensis* (Phillippe *et al.* 2008, p. 11; Armstrong 2010, pers. comm.; Kieninger 2010, pers. comm.; Catchpole 2010, pers. comm.).

There is one record of *Calopogon oklahomensis* collected in Lake County, Indiana. It was originally (in 1912) identified in the Indiana Natural Heritage Database as *C. pulchellus*, however, it was later (in 1999) determined to be *C. oklahomensis* by Goldman (Phillippe 2010, pers. comm.). Indiana has records of the closely related congener, *C. puchellus*, that were collected prior to *C. oklahomensis* being described as a unique species (Deam 1940, p. 347; King 2009, pers. comm.). We have no information of extant *C. oklahomensis* populations in Indiana.

There are no known extant populations of *Calopogon oklahomensis* in Iowa. Our information indicates that only historical records exist, but we do not know how many historical records exist. The species is believed to be extirpated in the State (Pearson 2009, pers. comm.).

Kansas has one historical record of *Calopogon oklahomensis* from Cherokee County, dated May 1980 (Freeman 2011, pers. comm.). This specimen was annotated as *C. oklahomensis* by Goldman in 1999 (Freeman 2008, pers. comm.). This site and other prairie hay meadows in the county have been searched for *C. oklahomensis* over the past 30 years, with no populations of this species located (Freeman 2011, pers. comm.).

Mississippi has three known extant populations of *Calopogon oklahomensis* located at the Camp Shelby Joint Forces Training Center (Camp Shelby), a National Guard installation operating under a special use permit on U.S. Forest Service land. These three populations are separated by more than 1 mile (1.6 kilometers (km)) each and occur in three separate watersheds; therefore, they are considered separate populations (Wiggers 2011b, pers. comm.). The Poplar Creek population includes four separate colonies. One colony was last surveyed in 2004, with an estimated population of 1 to 10 individuals (Wiggers 2011b, pers.

comm.; 2011c, pers. comm.). The second and third colonies were last surveyed in 2006, with one population estimated at 11 to 50 individuals and the other population estimated at 101 to 1,000 individuals (Wiggers 2011b, pers. comm.; 2011c, pers. comm.). The fourth Poplar Creek colony size is unknown (Wiggers 2011c, pers. comm.). The minimum population size of all the Poplar Creek colonies is estimated at 113 individuals (Wiggers 2011c, pers. comm.).

In Mississippi, the Clear Creek population includes two colonies, one of which was last surveyed in 1999, with a population estimate of 11 to 50 individual plants, and the other colony last surveyed in 2004, with a population estimate of 1 to 10 individuals (Wiggers 2011b, pers. comm.; 2011c, pers. comm.). The minimum population size of all Clear Creek colonies is 12 individuals (Wiggers 2011c, pers. comm.).

The Pearces Creek population in Mississippi consists of two colonies of *Calopogon oklahomensis*, both with a population estimate of 1 to 10 individuals, with one colony last surveyed in 1999 and the other last surveyed in 2004 (Wiggers 2011b, pers. comm.; 2011c, pers. comm.). The minimum population size of both Pearces Creek colonies is two individuals (Wiggers 2011c, pers. comm.). The total Camp Shelby population estimate of *C. oklahomensis* is 127 individuals; however, this is only a rough estimate, as current population counts are unavailable (Wiggers 2011b, pers. comm.). Within Camp Shelby, there may be other areas of *C. oklahomensis* located within an "impact area" (an area containing unexploded ordnance), which has been protected from active training, draining, and clearing since World War I (Wiggers 2011a, pers. comm.; Lyman 2011a, pers. comm.). Surveys have not been conducted in this "impact area" due to its restricted access (Wiggers 2011b, pers. comm.).

In Missouri, prior to describing *Calopogon oklahomensis* as distinct from *C. tuberosus*, *C. oklahomensis* was not tracked in the Missouri Natural Heritage Database. Once *C. tuberosus* was split into the two species, Missouri began tracking only the rarer and range-limited *C. tuberosus* (Yatskiyevych 2009, pers. comm.; Kruse 2010, pers. comm.); however, the Missouri Botanical Garden indicates that Missouri has at least 11 sites with extant populations of *C. oklahomensis* (Yatskiyevych 2009, pers. comm.). At least 10 of the 11 extant sites occur on public lands that are managed as native prairie, however, there are no

current studies in Missouri on population size, success of reproduction, or other indicators of status (Yatskiyevych 2009, pers. comm.).

Oklahoma has 24 historical populations of *Calopogon oklahomensis* from 15 counties, with 6 sites having extant populations, 5 of which occur on private land (Hoagland *et al.* 2004, entire; Buthod 2010, pers. comm.). The site of the sixth *C. oklahomensis* population in Oklahoma is owned by the State of Oklahoma and used by the Department of Corrections as the Jess Dunn Prison.

Tennessee acknowledges a single occurrence of *Calopogon oklahomensis* in the Tennessee Natural Heritage Program Geographic Information System (GIS) database. It was last observed in 1937, with no details available in the record regarding location or abundance (Call 2009, pers. comm.). To our knowledge, the species has not been recorded in Tennessee for more than 20 years, and is possibly extirpated from the State (Call 2009, pers. comm.).

Texas has historical records of 12 to 13 specimens of *C. oklahomensis* from 12 counties, including information from the University of Texas herbarium database, which lists only 5 specimens collected from 1927 to 1965 (Poole 2008, pers. comm.). It is believed that some of the sites from where the specimens were collected may no longer be extant (Poole 2008, pers. comm.; Best 2009, pers. comm.). The most recent specimen from Brazos County, Texas, was last observed by Goldman in 2004 (Goldman 2008a, p. 9). Although this species is not tracked in Texas, we assume presence of *C. oklahomensis* at the Brazos County site because it was last observed in 2004, although no further surveys have taken place since then. We acknowledge that there may be other extant sites of *C. oklahomensis* in Texas, but because this species is not tracked in Texas, we have no information other than what is stated above.

In Wisconsin, records indicate that *Calopogon oklahomensis* was historically known from seven sites in five counties between 1872 and 2005 (Anderson 2010a, pers. comm.; Anderson 2010b, pers. comm.). Currently, Greene Prairie at the University of Wisconsin-Madison Arboretum supports perhaps the only extant population of *C. oklahomensis* in Wisconsin (Anderson 2010a, pers. comm.). The plants at Greene Prairie originated from a site in Sauk County near Sauk City, but the exact location is unknown. Wisconsin's historical collections do not contain specific site information other than they originated

from Dane, Grant, Monroe, Sauk, and Waukesha Counties (Anderson 2010a, pers. comm.; Anderson 2010b, pers. comm.). Although the Arboretum population is not naturally occurring, it is considered a self-sustaining introduction and relocation, which is valuable for biodiversity conservation (O'Connor 2011, pers. comm.).

The Minnesota Department of Natural Resource's Rare Features Database contains no records for this species (Delphay 2009, pers. comm.).

Based on the information described above regarding locations of extant populations, we believe the current range of *Calopogon oklahomensis* includes the seven States of Arkansas, Illinois, Mississippi, Missouri, Oklahoma, Texas, and Wisconsin.

The State Natural Heritage programs and NatureServe (NatureServe 2010c, p. 3) rank *Calopogon oklahomensis* as S1 in Illinois, Mississippi, and Texas. The S1 designation indicates the species is considered critically imperiled because of extreme rarity (5 or fewer occurrences or less than 1,000 individuals) or because of extreme vulnerability to extinction due to some natural or human-made factor. The Arkansas and Oklahoma State Natural Heritage Programs rank *C. oklahomensis* populations in Arkansas and Oklahoma as S2, meaning the species is considered imperiled because of rarity (6 to 20 occurrences of less than 3,000 individuals) or because of vulnerability to extinction due to some natural or man-made factor (NatureServe 2010c, p. 3). In Wisconsin, the State Natural Heritage program ranks *C. oklahomensis* as SH, meaning the species is possibly extirpated in that State (NatureServe 2010c, p. 3). These State heritage program rankings are not legal designations and do not confer State regulatory protection to this species.

This species is either not State ranked or is under review in the States of Iowa, Minnesota, and Missouri (NatureServe 2010c). In Missouri, the species is not tracked by the State; however, status surveys for *Calopogon oklahomensis* are being conducted in 2011 (Yatskievych 2009, pers. comm.; 2011, pers. comm.).

Based on the available information, as summarized above, we believe the historical range of *Calopogon oklahomensis* includes 11 States (Arkansas, Iowa, Illinois, Kansas, Louisiana, Mississippi, Missouri, Oklahoma, Tennessee, Texas, and Wisconsin), and the current range includes 7 States (Arkansas, Illinois, Missouri, Oklahoma, Mississippi, Texas, and Wisconsin).

#### Habitat

*Calopogon oklahomensis* inhabits a variety of habitats, including moist to seasonally dry-mesic prairies; tallgrass and coastal prairies; prairie-haymeadows; upland prairies; savannas; open woodlands (e.g., post oak-blackjack oak woodlands); hillside seepage bogs; edges of bogs; and occasionally pine plantations, acidic wet barrens, or claypan savannas (Goldman 1995, p. 40; Brown 2006, p. 22). The species is not found in the wetter habitats preferred by most of the other species in the genus (Goldman 1995, p. 40; Brown 2006, p. 22; Goldman 2008, p. 2). It is also found in prairie remnants such as those beside railroads, as well as other mowed meadows, savannas (e.g., longleaf pine (*Pinus palustris*) savannas), and wetland savanna borders (NatureServe 2010b, p. 10). The upland prairies often contain "pimple mounds" (naturally occurring low, flattened, circular to oval, domelike, mounds composed of loose, sandy loam or loamy sand lying either on a more or less flat or slightly, but noticeably depressed, clayey B horizon (subsoil layer)). In Arkansas, Missouri, and Oklahoma, the species occupies moist to seasonally dry-mesic prairies and high-quality hay meadow associated with pimple mounds (Goldman 2008a, p. 8).

#### Biology

*Calopogon oklahomensis* occurs sporadically at known locations, with the number of flowering plants varying dramatically from year to year. The number of flowering plants may depend on management practices; for example, abundance of *C. oklahomensis* increases significantly after a fire has occurred (Goldman 2008a, p. 10). *Calopogon oklahomensis* appears to thrive under relatively frequent fires (every 1 to 3 years), particularly dormant-season burns; late-season haymeadow mowing, where most or all of the above-ground vegetation is removed once every 1 to 2 years, with no thatch left behind; and light grazing (Osborne 2010, pers. comm.). The species also appears to respond favorably to summer haying (late June or July) on prairie remnants managed as hayfields (Osborne 2010, pers. comm.).

Goldman (2008a, pp. 4–5) describes the genus *Calopogon* as having two growing points, which means that the plant has two chances for reproductive success in a given year. He has observed that if both growing points initiate, they do so at different times, one earlier in the season and one slightly later. When dormant, *Calopogon* corms can survive

some drying, but if drought or other disturbance strikes while they are forming new leaves or flowering, they can be severely damaged or killed. The second growing point, by initiating up to a few months later when environmental conditions may have improved, seems to be an adaptation to survive springtime drought or other disturbance such as fires or grazing (Goldman 2008a, p. 5). Most other vascular plants survive such disturbance by resprouting from multiple tiny, dormant buds, or forming new buds. Therefore, *Calopogon* may be more vulnerable to local extirpation because of the limitation of having only two growing points (Goldman 2008a, p. 5).

#### Summary of Information Pertaining to the Five Factors

Section 4 of the Act (16 U.S.C. 1533) and implementing regulations (50 CFR part 424) set forth procedures for adding species to, removing species from, or reclassifying species on the Federal Lists of Endangered and Threatened Wildlife and Plants. Under section 4(a)(1) of the Act, a species may be determined to be endangered or threatened based on any of the following five factors:

- (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 making this finding, information pertaining to *Calopogon oklahomensis* in relation to the five factors provided in section 4(a)(1) of the Act is discussed below. 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 warrants listing as threatened or endangered 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 is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors are operative threats that act on the species to the point that the species meets the definition of threatened or endangered under the Act.

In making our 12-month finding on the petition to list *Calopogon oklahomensis*, we considered and evaluated the best available scientific and commercial information.

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

Some habitats of *Calopogon oklahomensis*, such as tallgrass prairie, remnant prairie, prairie-haymeadow, and mowed meadow, have historically suffered destruction across their entire range through development, plowing, lowering of the water table, fire suppression, construction, and conversion to nonnative grasses. Appropriate management for these habitats (typically burning or haying) to prevent the encroachment of woody vegetation and nonnative species is crucial for the continued existence of prairie-dependent species within these habitats, including *C. oklahomensis*. Because these habitats are the preferred habitat of *C. oklahomensis*, and because proper management of prairie habitat on public land cannot be ensured, and is even less ensured on private land, it is reasonable to conclude that overall habitat of *C. oklahomensis* has been modified and destroyed in the past, and could foreseeably continue into the future. However, this threat does not rise to the level where listing *C. oklahomensis* as threatened or endangered is warranted, as discussed below.

There are 41 extant sites supporting populations of *Calopogon oklahomensis* within the 7-State range (Arkansas, Illinois, Mississippi, Missouri, Oklahoma, Texas, and Wisconsin) of the species (Table 3). Many of the remaining populations of *C. oklahomensis* occur within high-quality habitat, which is protected from further modification and

destruction by various measures, as further described below. In Arkansas, 9 of the 17 extant occurrences of *C. oklahomensis* occur in high-quality, unplowed tallgrass prairie remnants (Leone 2011, pers. comm.; Witsell 2010, pers. comm.; Osborne 2010, pers. comm.), which are currently protected and managed on 9 State Natural Areas in five counties. The Arkansas Natural Heritage Commission (ANHC) is charged with the responsibility of protecting the best of the last remaining vestiges of the State's natural communities through its System of Natural Areas. Natural Areas are lands specifically managed to preserve, and sometimes restore, rare natural communities. These nine State Natural Areas have specific "conservation visions" that guide site management in maintaining native prairie communities (ANHC 2010, pp. 10–88). In addition, ANHC rules and regulations prohibit the collection or removal of plants (including fruits, nuts, or edible plant parts), animals, fungi, rocks, minerals, fossils, archaeological artifacts, soil, downed wood, or any other natural material, alive or dead (ANHC 2010, p. 1). Although these "conservation visions" do not specifically address management for *C. oklahomensis*, they include appropriate management for the continued existence of *C. oklahomensis* at these sites, through burning or haying to prevent the encroachment of woody vegetation and nonnative species.

Of the 9 extant *Calopogon oklahomensis* populations within Arkansas State Natural Areas, *C. oklahomensis* was last observed in 2002 at Baker Prairie with 75 to 100 plants in bloom, in Searles Prairie in 2003 with at least 35 plants in bloom, Chesney Prairie in 2003 had several hundred *C. oklahomensis* plants in bloom, and Cherokee Prairie had several hundred to at least 1,000 plants in 2003 (Arkansas Natural Heritage Commission (ANHC) 2011). In 2008, three other *C. oklahomensis* populations surveyed at three different Natural Areas (Downs Prairie, Konecny Prairie, and Roth Prairie) had 5, 12, and more than 50 blooming plants, respectively (ANHC 2011). The H.E. Flanagan Prairie, surveyed in 2007, had hundreds of *C.*

*oklahomensis* blooms, and the Railroad Prairie was surveyed in 2009, with 3 *C. oklahomensis* plants found (ANHC 2011).

One *Calopogon oklahomensis* population in Arkansas occurs on the Fort Chaffee Maneuver Training Center (Fort Chaffee). Management specifically for *C. oklahomensis* does not occur at Fort Chaffee; however, Fort Chaffee has the largest known population of the federally endangered American burying beetle (*Nicrophorus americanus*) and is implementing a "Conservation Plan for the American Burying Beetle" (CPABB 2010) (Leone 2011, pers. comm.). The goal of the Conservation Plan is to maintain existing populations of the American burying beetle, with sustainable habitat. American burying beetles require large tracts of open oak woodland and prairie, some of which are also occupied by *C. oklahomensis* at Fort Chaffee. The Conservation Plan outlines a strategy that limits long-term and short-term habitat loss, fragmentation, and degradation to the greatest extent possible (CPABB 2010, p. 31). Another strategy in the Conservation Plan uses fire as a management tool and evaluates the effects that fire has on the habitat (CPABB 2010, p. 36). Such fire management is also beneficial to *C. oklahomensis* habitat (Goldman 2008a, p. 10).

Because the Conservation Plan manages for American burying beetle habitat, including prairie, its implementation also will benefit *Calopogon oklahomensis*, which occurs in that prairie habitat. Although the Conservation Plan does not specifically address *C. oklahomensis*, this plan includes appropriate management tools to manage for the continued existence of *C. oklahomensis* at this site.

Arkansas has seven additional *Calopogon oklahomensis* populations that occur on private land (Table 3), of which four are managed as hayfield, two are managed for prairie, and one is mowed (Leone 2011, pers. comm.). These seven populations are not currently protected from conversion to other uses, and habitat destruction or modification may be a threat to these *C. oklahomensis* populations.

TABLE 3—EXTANT CALOPOGON OKLAHOMENSIS POPULATION INFORMATION BY STATE

State	Est. extant pops.	Site/location NA = Natural Area	Land ownership	Current habitat management plan and future plans	Protection status	Threats
AR .....	1	Cherokee Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to restore and protect biological diversity representative of tallgrass prairies of the western Arkansas Valley by maintaining natural ecosystem processes.	Yes.	
AR .....	1	Chesney Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to restore and protect biological diversity representative of Northwest Arkansas prairies by maintaining natural ecosystem processes.	Yes.	
AR .....	1	Downs Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to maintain representative communities and species related to the landform, hydrology, fire, and other ecosystem processes of the Grand Prairie.	Yes .....	Factor B (poaching at one State Natural Area).
AR .....	1	H. E. Flanagan Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to restore and protect the biological diversity representative of tallgrass prairies of the western Arkansas Valley by maintaining natural ecosystem processes.	Yes.	
AR .....	1	Konecny Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to maintain the integrity of this remnant of tallgrass prairie community representative of the vegetation and biota of the Grand Prairie.	Yes.	
AR .....	1	Railroad Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to maintain a representative transect of communities and species related to the landform, hydrology, fire and other ecosystem processes of the Grand Prairie of eastern Arkansas.	Yes.	
AR .....	1	Roth Prairie NA	AR Natural Heritage Commission.	The conservation vision is to work in conjunction with Arkansas State University to maintain the viability and associated biological diversity of a remnant tallgrass prairie in the Grand Prairie of eastern Arkansas.	Yes.	
AR .....	1	Searles Prairie NA.	AR Natural Heritage Commission.	The conservation vision is to protect the biological diversity characteristic of a tallgrass prairie remnant on the Springfield Plateau of the Ozark Mountains.	Yes.	
AR .....	1	Baker Prairie NA	AR Natural Heritage Commission and The Nature Conservancy (TNC).	The conservation vision is to maintain a mosaic of prairie communities and associated ecological diversity buffered from the stresses of nearby development. <i>C. oklahomensis</i> falls on a tract owned by TNC.	Yes.	
AR .....	1	Ft. Chaffee Military Base.	Department of Defense.	This site has an Integrated Natural Resource Management Plan and an American burying beetle (ABB) Conservation Plan. The goal of the ABB plan is to maintain existing populations with sustainable habitat. ABBs require large tracts of open oak woodland and prairie.	Yes.	
AR .....	1	Gray .....	Private .....	Managed as prairie .....	No .....	Factor A (No land protection status).
AR .....	1	Crossett Airport ..	Private .....	Mowed .....	No .....	Factor A (No land protection status).



TABLE 3—EXTANT *CALOPOGON OKLAHOMENSIS* POPULATION INFORMATION BY STATE—Continued

State	Est. extant pops.	Site/location NA = Natural Area	Land ownership	Current habitat management plan and future plans	Protection status	Threats
AR .....	1	Burt Prairie .....	Private .....	Managed as hayfield .....	No .....	Factor A (No land protection status).
AR .....	1	McFarren .....	Private .....	Managed as hayfield .....	No .....	Factor A (No land protection status).
AR .....	1	Stump .....	Private .....	Managed as hayfield .....	No .....	Factor A (No land protection status).
AR .....	1	Halijan .....	Private .....	Managed as hayfield .....	No .....	Factor A (No land protection status).
AR .....	1	Weber Prairie .....	Private .....	Managed as hayfield .....	No .....	Factor A (No land protection status).
IL .....	1	Hitt's Siding Prairie Nature Preserve.	.....	Managed by the Nature Preserves with regular burns, and control of exotic species (woody and herbaceous).	Yes .....	Factor C (predation).
IL .....	1	Braidwood Nature Preserve.	.....	Managed by the Forest Preserve District of Will County with regular burns, and control of exotic species (woody and herbaceous).	Yes.	
MO .....	8	.....	2 to 3 sites owned by TNC.	Managed by MO Department of Conservation for prairie habitat.	Yes.	
MO .....	2	Coyne Prairie .....	MO Prairie Foundation.	Managed for prairie habitat .....	Yes.	
MO .....	1	.....	Private .....	No management plan in effect .....	No .....	Factor A (No land protection status; lack of management).
MS .....	3	Camp Shelby Joint Forces Training Center.	U.S. Forest Service/Dept. of Defense with special use permit.	No known management plan in effect, however portions of these populations receive incidental protection because they are located within a 165 foot buffer for the federally endangered <i>Isoetes louisianensis</i> (Louisiana quillwort).	Yes.	
OK .....	5	.....	Private .....	No known management plans in effect.	No .....	Factor A (No land protection status; development and/or conversion to fescue for grazing use).
OK .....	1	.....	State of Oklahoma/Dept. of Corrections.	No known management plans in effect.	?	
TX .....	1	College Station, Brazos County.	City owned park	No known management plan in effect.	No .....	Factor A (No land protection status; development; lack of appropriate management).
WI .....	1	Greene Prairie ...	University of Wisconsin Arboretum.	Managed for prairie habitat .....	Yes.	
Total .....	41					

Illinois has two extant *Calopogon oklahomensis* populations, which occur within designated Illinois Nature Preserves (Table 3). This designation affords land protection only to high-quality natural areas. Dedication as a

Nature Preserve is the strongest protection given to land in Illinois, and provides permanent protection. The landowner retains custody of the property, but voluntarily restricts future uses of the land in perpetuity to

preserve its natural state and to perpetuate natural conditions. Illinois Nature Preserves are managed for native plant communities. This type of management is appropriate for the continued existence of *C. oklahomensis*

at these sites, as the species occurs within native prairie communities.

In Mississippi, all three extant *Calopogon oklahomensis* populations occur on U.S. Forest Service (USFS) land (Table 3), with a special use permit issued to the Camp Shelby. Under the Act, the USFS must ensure that activities they implement, fund, or permit are not likely to jeopardize the continued existence of a listed species. Federal agencies are also instructed to implement programs for the conservation of listed species. Portions of two of the *C. oklahomensis* populations (Poplar Creek and Clear Creek) in Mississippi and on USFS land receive incidental protection from future forest clearing and development because they are located within the 165-foot (ft) (50-meter (m)) buffer of the federally endangered *Isoetes louisianensis* (Louisiana quillwort) (Lyman 2011, pers. comm.; Wiggers 2011b, pers. comm.). This buffer was established in the Federal recovery plan for *I. louisianensis* and includes restricted timber harvest and riparian zone protection to ensure that habitat conditions are not altered, such as changes in ambient light, increase in sediment load from runoff, or alteration of stream flow from debris deposition (USFWS 1996, p. 18). Because these populations of *C. oklahomensis* occur within the 165-ft (50-m) buffer for *I. louisianensis*, the protections in place for the quillwort also protect those portions of the Poplar Creek and Clear Creek populations of *C. oklahomensis* (FEIS 2008).

Missouri has experienced declines in prairie habitat (less than 0.5 percent of original prairie acreage remains), possibly resulting in *Calopogon oklahomensis* being uncommon in this State. At least 10 of the 11 extant sites in Missouri occur on public lands managed as native prairie (Table 3) (Yatskiyevych 2009, pers. comm.). Although *C. oklahomensis* is considered uncommon in Missouri, it is not considered so rare as to be tracked. Therefore, population status studies in Missouri have not been conducted. Even so, Yatskiyevych (2009, pers. comm.) believes the existing sites are reasonably secure. Kruse (2010, pers. comm.) believes that management of public prairies will ensure the stable and continued existence of Missouri's populations of *C. oklahomensis* (Kruse 2010, pers. comm.). This species is reported from a number of prairie preserves in southwestern Missouri, and likely is more secure in Missouri than any other State (Goldman 2008a, p. 3).

Goldman (2008a, p. 8) believes Oklahoma had the greatest number of

records of the species from the last 30 years; however, there are currently six extant sites of *Calopogon oklahomensis* in Oklahoma (Table 3) (Buthod 2010, pers. comm.) Buthod (2010, pers. comm.) indicates that portions of *C. oklahomensis* habitat in Oklahoma are being converted to fescue and being used for grazing, as five of the six extant populations are on private land. The site of the sixth *C. oklahomensis* population in Oklahoma is owned by the State of Oklahoma and used by the Department of Corrections (Table 3) as the Jess Dunn Prison. Current information indicates that the prison grounds have no native grass pasture and are actively hayed and growing fescue (Frye 2011, pers. comm.). In 2009 and 2010, personnel from the Oklahoma Biological Survey and the Oklahoma Natural Heritage collected information on the status of extant *C. oklahomensis* populations on private land in Oklahoma (Buthod 2010, pers. comm.). Two populations of *C. oklahomensis* exist in Bryan County, Oklahoma. One of those population's sites is described as having native prairie hay meadow elements, but *C. oklahomensis* could not be located at this site (Buthod 2011, pers. comm.). This site is on the outskirts of Durant, Oklahoma, where the land is currently not in use, but exhibits evidence of disturbance from pipeline construction, and is expected to be developed for commercial or private use (Buthod 2011, pers. comm.). The second *C. oklahomensis* population in Bryan County, Oklahoma, was surveyed in May 2010. It has some native prairie hay meadow elements, but is used for hay. *Calopogon oklahomensis* could not be located at that site in 2010 (Buthod 2011, pers. comm.).

Two other *Calopogon oklahomensis* populations occur in LeFlore County, Oklahoma. Surveys conducted in May 2009 indicated 20 plants of *C. oklahomensis* at one LeFlore County site, which is mowed for hay (Buthod 2011, pers. comm.). The other site in LeFlore County had one *C. oklahomensis* plant observed in native prairie hay meadow with mima mounds (natural domelike soil mounds) (Buthod 2011, pers. comm.).

The fifth *Calopogon oklahomensis* population in Oklahoma that is on private land is in Muskogee County. Over 50 stems of *C. oklahomensis* (80 percent in bloom) were seen in May 2009 (Buthod 2011, pers. comm.). The site is mowed for hay and also has mima mounds.

The destruction, modification, or curtailment of *Calopogon oklahomensis* habitat may be a threat for at least five of Oklahoma's six extant populations

because they occur on private land. The private land, as currently managed, does not afford the species any land protection status or certainty on future land use, nor does it provide an obligation for management, such as burning or mowing, conducive to the continued existence of *C. oklahomensis*.

In Texas, there is one extant population of *C. oklahomensis* located in Brazos County, which exists in a city-owned park near College Station, Texas (Goldman 2008a, p. 9). We have no information on the management of the site other than Goldman (2008a, p. 9) believes the site is not burned, even occasionally, and, therefore, is experiencing tree and shrub encroachment.

In Wisconsin, *Calopogon oklahomensis* occurs within the University of Wisconsin Arboretum's Greene Prairie. Greene Prairie is not specifically managed for *C. oklahomensis*, but it is managed to maintain native prairie communities, which is the preferred habitat of *C. oklahomensis*.

#### Summary of Factor A

The destruction and modification of *Calopogon oklahomensis* habitat, specifically tallgrass prairie, remnant prairie, prairie-haymeadow, and mowed meadow, has historically occurred rangewide. Furthermore, the destruction and modification of some types of *C. oklahomensis* habitat (tallgrass prairie, remnant prairie, prairie haymeadow, and mowed meadow) currently continues rangewide. However, of the 41 extant *C. oklahomensis* populations, 26 are on land that is protected, and although those sites may not be managed specifically for *C. oklahomensis*, the management focuses on the continued existence of native prairie communities, which benefits *C. oklahomensis* as its preferred habitat is native prairie communities. Therefore, we believe this threat may only be applicable to 15 of the 41 extant populations in 4 (Arkansas, Oklahoma, Missouri, and Texas) of the 7 States where the species currently occurs (Table 3).

Of the 15 extant populations that may be threatened by destruction or modification of habitat, 14 populations occur on private land with no land protection status, and we have no information on the land protection status for one other population that occurs on land owned by the State of Oklahoma Department of Corrections. The 14 populations that occur on private land, and that are documented as having no land protection status, may be threatened by destruction or

modification of habitat from drainage, clearing, plowing, development, and lack of management, including the conversion to fescue for grazing (Table 3). In Arkansas, where 7 of those 14 populations occur, 4 sites are managed as hayfield, 2 as prairie, and 1 is mowed. The management of these seven extant *Calopogon oklahomensis* populations on private land may be adequate to maintain their continued existence.

Fourteen populations of *Calopogon oklahomensis* occur on private land, which are not protected from destruction or modification of habitat. Habitat destruction and modification, however, have not been linked to widespread declines throughout the range of the species. The majority of *C. oklahomensis* populations (26 populations) occur on protected, public land that is managed for native plant communities. These 26 protected populations occur in 5 (Arkansas, Mississippi, Missouri, Illinois, and Wisconsin) of the 7 States within the species' current range. Furthermore, although the 14 populations that occur on private land are not specifically protected from habitat destruction, we have no information indicating that these 14 populations are expected to be destroyed in the future. Therefore, a review of the best available information indicates that although some populations of *C. oklahomensis* may be threatened by habitat destruction or modification, the continued existence of the species is not threatened throughout all of its range by the present or threatened destruction, modification, or curtailment of its habitat or range, or likely to become so.

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

In Arkansas, poaching of *Calopogon oklahomensis* was observed at one State Natural Area (Down's Prairie) in recent years (Osborne 2010, pers. comm.). In this case, a number of obvious and fresh shovel holes were observed in the center of a patch of *C. oklahomensis* during the blooming period (Osborne 2010, pers. comm.). The poaching was noted as a one-time event, and *C. oklahomensis* persisted at this location after the incident (Osborne 2011, pers. comm.). This State Natural Area is regularly monitored with no additional poaching observed, but it is difficult to determine the true impact of this one-time poaching event as population numbers of *C. oklahomensis* fluctuate greatly from one year to the next (Osborne 2011, pers. comm.).

We have no other information regarding overutilization of this species for commercial, recreational, scientific, or educational purposes. Because poaching of plants is known to have occurred at only 1 extant *Calopogon oklahomensis* population and does not appear to have adversely impacted that population, poaching does not constitute a threat to the species throughout its range. In summary, a review of the best available information indicates that *C. oklahomensis* is not threatened by overutilization for commercial, recreational, scientific, or educational purposes throughout its range.

#### *Factor C. Disease or Predation*

Disease and herbivory by insects, wildlife, or livestock was documented for *Calopogon oklahomensis* at only one location. At Hitt's Siding Prairie Nature Preserve, the State of Illinois has documented deer browse on the species and seed capsule destruction by weevils (Masi 2010, pers. comm.). We do not know how widespread this herbivory may be or if it resulted in detrimental effects on *C. oklahomensis* as deer and weevils naturally feed on many plant species. We have no other evidence of unnatural levels of predation for this species, and we do not have any information indicating that disease impacts *C. oklahomensis*. In summary, a review of the best available information indicates that *C. oklahomensis* is not threatened by disease or predation throughout its range.

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

There are no Federal laws that specifically protect *Calopogon oklahomensis*. At the State level, of the seven States within the current range of the species, *C. oklahomensis* is currently protected by State regulations only in Illinois, where it is State listed as endangered. The species is also State listed as endangered in Tennessee, but the species is believed to be extirpated there.

The Illinois Endangered Species Protection Act requires State and municipal agencies taking actions that might affect State or federally listed species (including plants) to avoid, minimize, or mitigate impacts to the listed species (<http://www.ilga.gov/legislation/lcs/ilcs3.asp?ActID=1730&ChapterID=43&Print=True> accessed on 09/06/2011). Furthermore, it is unlawful in the State of Illinois for any person to take plants on the List of Endangered and Threatened Species in Illinois without the express written permission of the landowner, or to sell or offer for

sale plants or plant products of endangered species. In addition, Illinois's two extant *Calopogon oklahomensis* sites occur on dedicated Nature Preserve land, which affords the species additional protections. Only high-quality natural areas qualify for this land protection status. Dedication as a Nature Preserve is the strongest protection that can be given to land in Illinois, and provides permanent protection. The landowner retains custody of the property, but voluntarily restricts future uses of the land in perpetuity to preserve its natural state and to perpetuate natural conditions.

In the State of Tennessee, *Calopogon oklahomensis* is considered endangered and possibly extirpated, as it has not been seen in the State for the past 20 years. It is possible that *C. oklahomensis* may no longer occur in Tennessee, however, if it is determined that the species still persists in Tennessee, under Tennessee Code Annotated 70-8-309, it is a violation for any person, other than the landowner, lessee, or other person entitled to possession, or the manager, in the case of publicly owned land, or a person with the written permission of the landowner or manager, to knowingly uproot, dig, take, remove, damage, destroy, possess, or otherwise disturb for any purpose any endangered species (Tenn. Code Ann. 2011).

Despite the lack of regulatory mechanisms to protect *Calopogon oklahomensis* in most States, we found that there are no threats that are placing the species at risk (Factors A, B, C, and E) that require regulatory mechanisms to protect the species. Therefore, we do not consider the inadequacy of regulatory mechanisms a threat to this species. We conclude that the best scientific and commercial information available indicates that *Calopogon oklahomensis* is not threatened throughout its range due to the inadequacy of existing regulatory mechanisms.

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

##### Small, Isolated Populations

Goldman (2008a, pp. 4-5) describes *Calopogon* species as having a unique biology that makes small or widely scattered populations more vulnerable to extirpation. A *Calopogon* corm contains only two growing points compared to other vascular plants, which have multiple tiny, dormant buds (Goldman 2008a, pp. 4-5). Because *Calopogon* does not form new buds, this species has only two chances for success at perpetuating the plant

through the next winter (Goldman 2008a, pp. 4–5). Therefore, the species may be particularly vulnerable to stochastic events, which, if they occur at a certain time (when the buds have formed or are forming), may destroy the chance for the plant to reproduce that year. Historically, the species most likely relied on a widespread mosaic of large populations, and thus some populations were able to escape local or regional droughts, allowing the species to persist and recolonize the drought-affected areas. This species now consists of smaller populations that may be geographically disconnected from each other. Existence in small, isolated populations can render species vulnerable to local, regional, or widespread extirpation due to uncontrollable natural forces, including local or regional climate perturbation such as drought. Such an event could eliminate most or all of a small population.

Species that are known from few, widely dispersed locations are inherently more vulnerable to extinction than widespread species because of the higher risks from genetic bottlenecks, random demographic fluctuations, and localized catastrophes such as long-term drought (Lande 1988, p. 1455; Pimm *et al.* 1988, p. 757; Mangel and Tier 1994, p. 607). These problems are further magnified when populations are few and restricted to a limited geographic area, and the number of individuals is very small. Populations with these characteristics face an increased likelihood of stochastic extinction due to changes in demography, the environment, genetics, or other factors, in a process described as an “extinction vortex” by Gilpin and Soulé (1986, pp. 24–25). Small, isolated populations often exhibit a reduced level of genetic variability or genetic depression due to inbreeding, which diminishes the species’ capacity to adapt and respond to environmental changes, thereby lessening the probability of long-term persistence (Soulé 1987, pp. 4–7). Inbreeding depression as the result of isolated, small populations can result in death, decreased fertility, smaller body size, loss of vigor, reduced fitness, and various chromosome abnormalities (Smith 1974, p. 350).

Although changes in the environment may cause populations to fluctuate naturally, small and low-density populations are more likely to fluctuate below a minimum viable population (the minimum or threshold number of individuals needed in a population to persist in a viable state for a given interval) (Shaffer 1981, p. 131; Shaffer and Samson 1985, pp. 148–150; Gilpin

and Soulé 1986, pp. 25–33). The problems associated with small population size and vulnerability to random demographic fluctuations or natural catastrophes are further magnified by synergistic interactions with other potential threats, such as those discussed above under Factor A. Despite evolutionary adaptations for rarity, habitat loss and degradation increase a species’ vulnerability to extinction (Noss and Cooperrider 1994, pp. 58–62). Historically, *Calopogon oklahomensis* was more widespread. An important benefit of this greater historical range resulted in an advantage of redundancy: Additional populations separated by some distance likely allowed some populations to be spared the impacts of localized or more discrete catastrophic events, such as drought. However, this advantage of redundancy may be lost with the reduction in *C. oklahomensis* range. Additionally, the unique biological features of *C. oklahomensis* described by Goldman (2008a, pp. 4–5), which limit reproduction and the ability to recolonize, may make this species more vulnerable to the effects of small population sizes and fragmented habitats.

Our assessment of this species’ status is complicated by the fact that we have limited information regarding population sizes of *Calopogon oklahomensis*. Although *C. oklahomensis* may be considered uncommon, it is not considered so rare as to be tracked by most States. (This may also be due to the recent recognition of *C. oklahomensis* as a distinct species). Therefore, population status studies have not been regularly conducted across its range for the 41 extant populations. Throughout the range of *C. oklahomensis* (the States of Arkansas, Illinois, Mississippi, Missouri, Oklahoma, Texas, and Wisconsin), we have limited population status information for three States (Arkansas, Mississippi and Oklahoma). Further complicating the availability of population data, the number of flowering plants annually can vary dramatically at any *C. oklahomensis* site, with this species not appearing some years (Witsell 2009, pers. comm.). In addition, because this species was relatively recently identified (1995), *C. oklahomensis* specimens have been confused for other *Calopogon* species, especially *C. tuberosus*, due to the difficulty in distinguishing the two species (Goldman 1995, pp. 37–41; Goldman *et al.* 2004b pp. 37–38; Anderson 2010a, pers. comm.). For these reasons, meaningful long-term

monitoring of the species is difficult, and long-term population abundance datasets are absent.

Unique features of the species’ biology increase its vulnerability to extirpation because it now exists in small, isolated populations. However, we have population density information only for some populations, and for some years, in three (Arkansas, Mississippi, and Oklahoma) of the seven States (Arkansas, Illinois, Mississippi, Missouri, Oklahoma, Texas, and Wisconsin) where *Calopogon oklahomensis* is believed to be extant. Populations may be large enough to withstand stochastic events. In addition, because *C. oklahomensis* is not tracked in four of the seven States where it exists, and there is, thus, likely unsurveyed potential habitat, there may be other, as yet unknown populations of *C. oklahomensis*. Although *C. oklahomensis* may be exposed to a potential threat from small population size and fragmented habitats, we have no evidence of a response to this factor. Rangewide, *C. oklahomensis* habitat is fragmented compared to historical occurrences of the species, and its unique biology may make it more vulnerable to extirpation than other vascular plants; however, we have no information that this threat may act on this species to the point that the species itself may be at risk or likely to become so.

#### Climate Change

The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 by the World Meteorological Organization and the United Nations Environment Program in response to growing concerns about climate change and, in particular, the effects of global warming. The IPCC Fourth Assessment Report (IPCC 2007, entire) synthesized the projections of the Coupled Model Intercomparison Project (CMIP) Phase 3, a coordinated large set of climate model runs performed at modeling centers worldwide using 22 global climate models (Ray *et al.* 2010, p. 11). Based on these projections, the IPCC has concluded that the warming of the climate system is unequivocal, as evidenced from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level (IPCC 2007, pp. 6, 30; Karl *et al.* 2009, p. 17). Changes in the global climate system during the 21st century are likely to be larger than those observed during the 20th century (IPCC 2007, p. 19). Several scenarios are virtually certain or very likely to occur in the 21st century including: (1) Over

most land, weather will be warmer, with fewer cold days and nights, and more frequent hot days and nights; (2) areas affected by drought will increase; and (3) the frequency of warm spells and heat waves over most land areas will likely increase (IPCC 2007, pp. 13, 53).

In instances for which a direct cause and effect relationship between global climate change and regional effects to a specific species has not been documented, we rely primarily on synthesis documents (e.g., IPCC 2007, entire; Karl *et al.* 2009, entire) to inform our evaluation of the extent that regional impacts due to climate change may affect our species. These synthesis documents present the consensus view of climate change experts from around the world. Typically, the projections of downscaled models agree with the projections of the global climate models (Ray *et al.* 2010, p. 25). Climate change projections are based on models with assumptions and are not absolute. Portions of the global climate change models can be used to predict changes at the regional-landscape scale; however, this approach contains higher levels of uncertainty than using global models to examine changes on a larger scale. The uncertainty arises due to various factors related to difficulty in applying data to a smaller scale, and to the paucity of information in these models such as regional weather patterns, local physiographic conditions, life stages of individual species, generation time of species, and species reactions to changing carbon dioxide levels. Additionally, global climate models do not incorporate a variety of plant-related factors that could be informative in determining how climate change could affect plant species (e.g., effect of elevated carbon dioxide on plant water-use efficiency, the life stage at which the limit affects the species (seedling versus adult), the lifespan of the species, and the movement of other organisms into the species' range) (Shafer *et al.* 2001, p. 207).

Regional landscapes also can be examined by downscaling global climate models. Global climate models can play an important role in characterizing the types of changes that may occur, so that the potential impacts on natural systems can be assessed (Shafer *et al.* 2001, p. 213).

Climate change is likely to affect the habitat of *Calopogon oklahomensis*, but we lack scientific information on what those changes may ultimately mean for the status of the species. Climate change effects are not limited to the timing and amount of precipitation; other factors potentially influenced by climate

change may in turn affect the habitat conditions for *C. oklahomensis*. For example, fire frequency may be influenced by climate change (Logan and Powell 2001, p. 170; Westerling *et al.* 2006, pp. 942–943) and may in turn increase suitable habitat of *C. oklahomensis*, as it is believed that frequent burns tend to increase population numbers of *C. oklahomensis* (Goldman 2008, p. 10). Impacts of specific events on *C. oklahomensis* and its habitat have not been analyzed. Climate change is likely to affect multiple variables that may influence the suitability of habitat for *C. oklahomensis*. As habitat conditions have fluctuated in the past, and *C. oklahomensis* has persisted throughout these fluctuations, this species should be able to persist so long as climate change does not result in extreme changes to important characteristics of the species habitat or life cycle, such as the complete loss of prairie habitat or the complete loss of available moisture at a crucial life stage. At this time, the best available scientific information does not indicate that impacts from climate change are likely to be a threat to the species to the point that the species may be at risk or likely to become so.

#### Summary of Factor E

Based on our evaluation, we find that *Calopogon oklahomensis* is not threatened by other natural or manmade factors. *Calopogon oklahomensis* may be more vulnerable to other natural or manmade factors such as genetic bottlenecks, random demographic fluctuations, climate change, and localized catastrophes such as long-term drought because of its unique biology and because populations may be small and fragmented from each other. At this time, the best available information on long-term population abundance does not enable us to make a connection between the species unique biology and small population size and the potential impacts outlined above. For this reason, a review of the best available information indicates that threats considered under Factor E may act on *C. oklahomensis*, but not to the point that the species is at risk now or now or likely to become so.

#### Finding

As required by the Act, we considered the five factors in assessing whether *Calopogon oklahomensis* is threatened or endangered throughout all of its range. We examined the best scientific and commercial information available regarding the past, present, and future threats faced by *Calopogon*

*oklahomensis*. We reviewed the petition, information available in our files, other available published and unpublished information, and we consulted with species and habitat experts, and other Federal, State, and tribal agencies.

The available information indicates that *C. oklahomensis* is a fairly wide-ranging species with relatively stable, protected populations in much of its current range. Based on our review of the best available scientific and commercial information pertaining to the five factors, we find that despite range reductions that have resulted in smaller, disconnected populations, and the species' reproductive biology, which may make it more vulnerable to extirpation through stochastic events, the threats, either individually or in combination, are not of sufficient imminence, intensity, or magnitude to indicate that *Calopogon oklahomensis* is in danger of extinction (endangered), or likely to become endangered within the foreseeable future (threatened), throughout all of its range.

#### Significant Portion of the Range

Having determined that *Calopogon oklahomensis* is not in danger of extinction or likely to become so within the foreseeable future throughout all of its range, we must next consider whether there are any significant portions of the range where *C. oklahomensis* is in danger of extinction or is likely to become in danger of extinction in the foreseeable future. The Act defines "endangered species" as any species which is "in danger of extinction throughout all or a significant portion of its range," and "threatened species" as any species which is "likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." The definition of "species" is also relevant to this discussion. The Act defines the term "species" as follows: "The term 'species' includes any subspecies of fish or wildlife or plants, and any distinct population segment [DPS] of any species of vertebrate fish or wildlife which interbreeds when mature." The phrase "significant portion of its range" (SPR) is not defined by the statute, and we have never addressed in our regulations: (1) The consequences of a determination that a species is either endangered or likely to become so throughout a significant portion of its range, but not throughout all of its range; or (2) what qualifies a portion of a range as "significant."

Two recent district court decisions have addressed whether the significant portion of its range language allows the

Service to list or protect less than all members of a defined “species”: *Defenders of Wildlife v. Salazar*, 729 F. Supp. 2d 1207 (D. Mont. 2010), concerning the Service’s delisting of the Northern Rocky Mountain gray wolf (74 FR 15123, Apr. 2, 2009); and *WildEarth Guardians v. Salazar*, 2010 U.S. Dist. LEXIS 105253 (D. Ariz. Sept. 30, 2010), concerning the Service’s 2008 finding on a petition to list the Gunnison’s prairie dog (73 FR 6660, Feb. 5, 2008). The Service had asserted in both of these determinations that it had authority, in effect, to protect only some members of a “species,” as defined by the Act (*i.e.*, species, subspecies, or DPS), under the Act. Both courts ruled that the determinations were arbitrary and capricious on the grounds that this approach violated the plain and unambiguous language of the Act. The courts concluded that reading the significant portion of its range language to allow protecting only a portion of a species’ range is inconsistent with the Act’s definition of “species.” The courts concluded that once a determination is made that a species (*i.e.*, species, subspecies, or DPS) meets the definition of “endangered species” or “threatened species,” it must be placed on the list in its entirety and the Act’s protections applied consistently to all members of that species (subject to modification of protections through special rules under sections 4(d) and 10(j) of the Act).

Consistent with that interpretation, and for the purposes of this finding, we interpret the phrase “significant portion of its range” in the Act’s definitions of “endangered species” and “threatened species” to provide an independent basis for listing; thus there are two situations (or factual bases) under which a species would qualify for listing: a species may be endangered or threatened throughout all of its range; or a species may be endangered or threatened in only a significant portion of its range. If a species is in danger of extinction throughout a significant portion of its range, it, the species, is an “endangered species.” The same analysis applies to “threatened species.” Therefore, the consequence of finding that a species is endangered or threatened in only a significant portion of its range is that the entire species shall be listed as endangered or threatened, respectively, and the Act’s protections shall be applied across the species’ entire range.

We conclude, for the purposes of this finding, that interpreting the significant portion of its range phrase as providing an independent basis for listing is the best interpretation of the Act because it is consistent with the purposes and the

plain meaning of the key definitions of the Act; it does not conflict with established past agency practice (*i.e.*, prior to the March 16, 2007, Memorandum Opinion issued by the Solicitor of the Department of the Interior, “The Meaning of ‘In Danger of Extinction Throughout All or a Significant Portion of Its Range’”) as no consistent, long-term agency practice has been established; and it is consistent with the judicial opinions that have most closely examined this issue. Having concluded that the phrase “significant portion of its range” provides an independent basis for listing and protecting the entire species, we next turn to the meaning of “significant” to determine the threshold for when such an independent basis for listing exists.

Although there are potentially many ways to determine whether a portion of a species’ range is “significant,” we conclude, for the purposes of this finding, that the significance of the portion of the range should be determined based on its biological contribution to the conservation of the species. For this reason, we describe the threshold for “significant” in terms of an increase in the risk of extinction for the species. We conclude that a biologically based definition of “significant” best conforms to the purposes of the Act, is consistent with judicial interpretations, and best ensures species’ conservation. Thus, for the purposes of this finding, a portion of the range of a species is “significant” if its contribution to the viability of the species is so important that, without that portion, the species would be in danger of extinction.

We evaluate biological significance based on the principles of conservation biology using the concepts of redundancy, resiliency, and representation. *Resiliency* describes the characteristics of a species that allow it to recover from periodic disturbance. *Redundancy* (having multiple populations distributed across the landscape) may be needed to provide a margin of safety for the species to withstand catastrophic events. *Representation* (the range of variation found in a species) ensures that the species’ adaptive capabilities are conserved. Redundancy, resiliency, and representation are not independent of each other, and some characteristic of a species or area may contribute to all three. For example, distribution across a wide variety of habitats is an indicator of representation, but it may also indicate a broad geographic distribution contributing to redundancy (decreasing the chance that any one event affects the

entire species), and the likelihood that some habitat types are less susceptible to certain threats, contributing to resiliency (the ability of the species to recover from disturbance). None of these concepts is intended to be mutually exclusive, and a portion of a species’ range may be determined to be “significant” due to its contributions under any one of these concepts.

For the purposes of this finding, we determine if a portion’s biological contribution is so important that the portion qualifies as “significant” by asking whether, *without that portion*, the representation, redundancy, or resiliency of the species would be so impaired that the species would have an increased vulnerability to threats to the point that the overall species would be in danger of extinction (*i.e.*, would be “endangered”). Conversely, we would not consider the portion of the range at issue to be “significant” if there is sufficient resiliency, redundancy, and representation elsewhere in the species’ range that the species would not be in danger of extinction throughout its range if the population in that portion of the range in question became extirpated (extinct locally).

We recognize that this definition of “significant” establishes a threshold that is relatively high. On the one hand, given that the consequences of finding a species to be endangered or threatened in a significant portion of its range would be listing the species throughout its entire range, it is important to use a threshold for “significant” that is robust. It would not be meaningful or appropriate to establish a very low threshold whereby a portion of the range can be considered “significant” even if only a negligible increase in extinction risk would result from its loss. Because nearly any portion of a species’ range can be said to contribute some increment to a species’ viability, use of such a low threshold would require us to impose restrictions and expend conservation resources disproportionately to conservation benefit: listing would be rangewide, even if only a portion of the range of minor conservation importance to the species is imperiled. On the other hand, it would be inappropriate to establish a threshold for “significant” that is too high. This would be the case if the standard were, for example, that a portion of the range can be considered “significant” only if threats in that portion result in the entire species’ being currently endangered or threatened. Such a high bar would not give the significant portion of its range phrase independent meaning, as the Ninth Circuit held in *Defenders of*

*Wildlife v. Norton*, 258 F.3d 1136 (9th Cir. 2001).

The definition of “significant” used in this finding carefully balances these concerns. By setting a relatively high threshold, we minimize the degree to which restrictions will be imposed or resources expended that do not contribute substantially to species conservation. But we have not set the threshold so high that the phrase “in a significant portion of its range” loses independent meaning. Specifically, we have not set the threshold as high as it was under the interpretation presented by the Service in the *Defenders* litigation. Under that interpretation, the portion of the range would have to be so important that current imperilment there would mean that the species would be currently imperiled everywhere. Under the definition of “significant” used in this finding, the portion of the range need not rise to such an exceptionally high level of biological significance. (We recognize that if the species is imperiled in a portion that rises to that level of biological significance, then we should conclude that the species is in fact imperiled throughout all of its range, and that we would not need to rely on the significant portion of its range language for such a listing.) Rather, under this interpretation we ask whether the species would be in danger of extinction everywhere without that portion, *i.e.*, if the species was completely extirpated from that portion.

The range of a species can theoretically be divided into portions in an infinite number of ways. However, there is no purpose to analyzing portions of the range that have no reasonable potential to be significant *and* threatened or endangered. To identify only those portions that warrant further consideration, we determine whether there is substantial information indicating that: (1) The portions may be “significant,” and (2) the species may be in danger of extinction there or likely to become so within the foreseeable future. Depending on the biology of the species, its range, and the threats it faces, it might be more efficient for us to address the significance question first or the status question first. Thus, if we determine that a portion of the range is not “significant,” we do not need to determine whether the species is endangered or threatened there; if we determine that the species is not endangered or threatened in a portion of its range, we do not need to determine if that portion is “significant.” In practice, a key part of the portion status analysis is whether the threats are geographically concentrated in some

way. If the threats to the species are essentially uniform throughout its range, no portion is likely to warrant further consideration. Moreover, if any concentration of threats applies only to portions of the species’ range that clearly would not meet the biologically based definition of “significant,” such portions will not warrant further consideration.

In determining whether *Calopogon oklahomensis* is threatened or endangered in a significant portion of its range, we first addressed whether any portions of the range of *C. oklahomensis* warrant further consideration. We have no evidence that any particular population or portion of the range of *C. oklahomensis* is critical to the species’ survival. *Calopogon oklahomensis* may actually occur continuously across its known range, but consistent, range-wide surveys have not been done. The population areas delineated in this document were derived from existing data and information; however, information on the species’ distribution and numbers may change with more survey effort. Other than the potential threat of habitat destruction and modification, which is concentrated on private land, other potential threats to the species are essentially uniform throughout its range. The 14 *C. oklahomensis* populations that occur on private lands, which are not specifically protected from habitat destruction or modification, are not contiguous, but scattered throughout the range of the species. Other than the land ownership, there is nothing unique about these 14 populations that would contribute to the resiliency, redundancy, or representation of the species—they have the same biological characteristics that contribute to the species resiliency to periodic disturbance; even in their absence, there are multiple, stable and protected populations distributed throughout the species’ range; and they do not contain unique genetic, morphological, physiological, behavioral, or ecological diversity of the species that is not represented in the protected populations. Therefore, we find that *C. oklahomensis* is not in danger of extinction now, nor is it likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Therefore, listing *C. oklahomensis* as threatened or endangered under the Act is not warranted at this time.

We request that you submit any new information concerning the status of, or threats to, *Calopogon oklahomensis* to our Chicago, Illinois Fish and Wildlife Office (see **ADDRESSES**) whenever it becomes available. New information

will help us monitor *C. oklahomensis* and encourage its conservation. If an emergency situation develops for *C. oklahomensis* or any other species, we will act to provide immediate protection.

#### References Cited

A complete list of references cited is available on the Internet at <http://www.regulations.gov> and upon request from the Chicago, Illinois Fish and Wildlife Office (see **ADDRESSES**).

#### Author

The primary author of this notice is a staff member of the Chicago, Illinois Ecological Services Field Office.

#### Authority

The authority for this section is section 4 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Dated: September 23, 2011.

#### Rowan Gould,

*Acting Director, Fish and Wildlife Service.*

[FR Doc. 2011–25530 Filed 10–3–11; 8:45 am]

**BILLING CODE 4310–55–P**

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## DEPARTMENT OF THE INTERIOR

### Fish and Wildlife Service

#### 50 CFR Part 17

[Docket No. FWS–R8–ES–2007–0023; MO 92210–0–0008–B2]

#### Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition to List the Amargosa River Population of the Mojave Fringe-Toed Lizard as an Endangered or Threatened Distinct Population Segment

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

**ACTION:** Notice of 12-month petition finding.

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**SUMMARY:** We, the U.S. Fish and Wildlife Service (Service), announce a 12-month finding on a petition to list the Amargosa River population of the Mojave fringe-toed lizard (*Uma scoparia*) located in San Bernardino County, California, as an endangered or threatened distinct population segment (DPS), under the Endangered Species Act of 1973, as amended (Act). After a thorough review of all available scientific and commercial information, we find that the Amargosa River population of the Mojave fringe-toed lizard does not constitute a DPS under our 1996 policy and, therefore, is not a listable entity under the Act. We ask the