List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen dioxide, Ozone, Reporting and recordkeeping requirements, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: May 20, 2010.

Ira W. Leighton,

Acting, Regional Administrator, EPA New England.

[FR Doc. 2010–13083 Filed 5–28–10; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2009-0020]
[MO 92210-0-0008-B2]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition To List *Castanea pumila* var. *ozarkensis*

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of petition finding and initiation of status review.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90–day finding on a petition to list *Castanea pumila* var. *ozarkensis* (Ozark chinquapin), a tree, as endangered or threatened under the Endangered Species Act of 1973, as amended (Act). Based on our review, we find that the petition presents substantial scientific or commercial information indicating that listing this species may be warranted. Therefore, with the publication of this notice, we are initiating a status review of the species to determine if listing *Castanea pumila* var. *ozarkensis* is warranted. To ensure that the review is comprehensive, we are requesting scientific and commercial data and other information regarding this species. Based on the status review, we will issue a 12 month finding on the petition, which will address whether the petitioned action is warranted, as provided in section 4(b)(3)(B) of the Act.

DATES: To allow us adequate time to conduct this review, we request that we receive information on or before August 2, 2010. Please note that if you are using the *Federal eRulemaking Portal* (see "**ADDRESSES**" section, below), the deadline for submitting an electronic comment is 11:59 p.m. Eastern Daylight Savings Time on this date.

After August 2, 2010, you must submit information directly to the Field Office (see **FOR FURTHER INFORMATION CONTACT** section below). Please note that we might not be able to address or incorporate information that we receive after the above requested date.

ADDRESSES: You may submit information by one of the following methods:

• Federal eRulemaking Portal: *http://www.regulations.gov*. In the box that reads "Enter Keyword or ID," enter the Docket number for this finding, which is **FWS-R4-ES-2009-0020**. Check the box that reads "Open for Comment/Submission," and click the Search button. You should then see an icon that reads "Submit a Comment." Please ensure that you have found the correct rulemaking before submitting your comment.

• *U.S. mail or hand-delivery*: Public Comments Processing, Attn**: FWS-R4-ES-2009-0020**; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will post all information we receive on *http://www.regulations.gov*. This generally means that we will post any personal information you provide us (see the **Request for Information** section below for more details).

FOR FURTHER INFORMATION CONTACT: Mark Sattelberg, Field Supervisor, Arkansas Ecological Services Field Office, 110 South Amity Road, Suite 300, Conway, AR 72032; by telephone (501-513-4470); or by facsimile (501-513-4480). If you use a telecommunications device for the deaf (TDD), please call the Federal Information Relay Service (FIRS) at 800-877-8339.

SUPPLEMENTARY INFORMATION:

Request for Information

When we make a finding that a petition presents substantial information indicating that listing a species may be warranted, we are required to promptly review the status of the species (status review). For the status review to be complete and based on the best available scientific and commercial information, we request information on *Castanea pumila* var. *ozarkensis* from governmental agencies, Native American Tribes, the scientific community, industry, and any other interested parties. We seek information on:

(1) The species' biology, range, and population trends, including:

(a) Habitat requirements for feeding, breeding, and sheltering;

(b) Genetics and taxonomy;

(c) Historical and current range, including distribution patterns;

(d) Historical and current population levels, and current and projected trends; and

(e) Past and ongoing conservation measures for the species, its habitat, or both.

(2) The factors that are the basis for making a listing determination for a species under section 4(a) of the Endangered Species Act of 1973, as amended (Act) (16 U.S.C. 1531 *et seq.*), which are:

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

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

(c) Disease or predation;

(d) The inadequacy of existing regulatory mechanisms; or

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

(3) The potential effects of climate change on this species and its habitat.

If, after the status review, we determine that listing *Castanea pumila* var. *ozarkensis* is warranted, we will propose critical habitat (see definition in section 3(5)(A) of the Act), in accordance with section 4 of the Act, to the maximum extent prudent and determinable at the time we propose to list the species. Therefore, within the geographical range currently occupied by *Castanea pumila* var. *ozarkensis,* we request data and information on:

(1) What may constitute "physical or biological features essential to the conservation of the species,"

(2) Where these features are currently found, and

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

In addition, we request data and information on "specific areas outside the geographical area occupied by the species" that are "essential to the conservation of the species." Please provide specific comments and information as to what, if any, critical habitat you think we should propose for designation if the species is proposed for listing, and why such habitat meets the requirements of section 4 of the Act.

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

Submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination. Section 4(b)(1)(A) of the

Act directs that determinations as to whether any species is an endangered or threatened species must be made "solely on the basis of the best scientific and commercial data available."

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

Information and supporting documentation that we received and used in preparing this finding, will be available for you to review at *http://www.regulations.gov*, or you may make an appointment during normal business hours at the U.S. Fish and Wildlife Service, Arkansas Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Background

Section 4(b)(3)(A) of the Act (16 U.S.C. 1533(b)(3)(A)) requires that we make a finding on whether a petition to list, delist, or reclassify a species presents substantial scientific or commercial information indicating that the petitioned action may be warranted. We are to base this finding on information provided in the petition, supporting information submitted with the petition, and information otherwise available in our files. To the maximum extent practicable, we are to make this finding within 90 days of our receipt of the petition and publish our notice of the finding promptly in the **Federal Register**.

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

Petition History

On January 6, 2004, we received a petition, dated December 28, 2003, from Mr. Joe Glenn of Hodgen, Oklahoma, requesting that the *Castanea pumila* var. *ozarkensis* (Ozark chinquapin) be listed under the Act as a candidate species. The petition clearly identified itself as such and included the requisite identification information for the petitioner(s), as required by 50 CFR 424.14(a). The petition contained supporting information regarding the species' ecology, threats to the species, and survey and occurrence data for a portion of the Ouachita Highlands in southeastern Oklahoma. We acknowledged receipt of the petition in a February 2, 2004, letter to Mr. Glenn. In that letter, we advised the petitioner that, due to a significant number of court orders and settlement agreements in Fiscal Year 2004, we would not be able to address the petitioned request at that time.

Previous Federal Action

On July 1, 1975 (40 FR 27924), *Castanea pumila* var. *ozarkensis* was included as one of the 3000 plant species under status review. It was proposed or reviewed by the Service for federal listing as an endangered species under the Act in 1976 (41 FR 17 24524). We, however, did not finalize that proposed rule (U.S. Fish and Wildlife Service 1988). *Castanea pumila* var. *ozarkensis* became a category 2 candidate on December 15, 1980 (45 FR 82480 82569). It was again advertised as a category 2 candidate on September 27, 1985 (50 FR 53640 53670). The status changed on February 21, 1990 (55 FR 6184 6229) to a category 1 candidate species . On September 30, 1993 (58 FR 51144 51190) the status changed back to a category 2 candidate species for listing.

Species Information

Castanea pumila var. *ozarkensis* was first identified as a separate species (*Castanea ozarkensis*) by Ashe (1923, p. 60). Ashe described the range of the species as "common north of the Arkansas River and westward from Center Ridge, Arkansas, northward to southwestern Missouri and westward to the Valley of the White River" (Tucker 1983, p. 2). Ashe (1923, p. 361) also described a second species, *Castanea arkansana*, in Arkansas. Ashe (1924, p. 45) reduced *Castanea arkansana* to varietal status as *Castanea ozarkensis* var. *arkansana*. Little (1953, p. 2, in Tucker 1983) reduced *Castanea arkansana* to synonymy with *Castanea ozarkensis*. Tucker (1975, p. 2, in Tucker 1983) reduced *Castanea ozarkensis* to a variety of the more common *Castanea pumila* (*Castanea pumila* var. *ozarkensis* (Ashe) Tucker) and concurred with Little's (1953) treatment of *Castanea arkansana*. Johnson (1988, p. 43) published a revision of *Castanea* sect. *Balanocastanion* concurring with Tucker's reduction of *Castanea ozarkensis* to a variety of *Castanea pumila*. Tucker's reduction is further supported in Smith's (1994, p. 54) Keys to the Flora of Arkansas.

Castanea pumila var. *ozarkensis* is a tree in the beech family (Fagaceae). *Castanea pumila* var. *ozarkensis* has leaves 10 to 25 centimeters (4 to 10 inches (in)) long, broadly lanceolate to elliptical, with coarse teeth that are 2.5 to 9 millimeters (mm) (0.1 to 0.35 in) long with whitish or yellowish-cream stellate (star-shaped) hairs on the lower surfaces. The bark is light brown to reddish brown or grayish, with broad flat ridges that break into loose plate-like scales. The fruits are subglobose to ovoid nuts up to approximately 20 mm (0.8 in) long enclosed in a spiny burr with burrs being solitary or in groups of two or three. The subspecies is distinguished from *Castanea pumila* var. *pumila* (Allegheny chinquapin) by the larger leaf size, larger teeth, and larger fruit, which also have hairs (Steyermark 1963, p. 531; Smith 1994, p. 54).

Castanea pumila var. *ozarkensis* was historically a medium-sized tree species that once grew to 20 meters (m) (65 feet (ft)), although usually much shorter, but now rarely reaches heights of more than 9 m (30 ft). Trunks develop from stump sprouts as well as from seeds, but in recent years, new growth is generally from sprouts. Trees reaching the age to produce fruit (4 to 5 years; Paillet 1993, p. 262) are increasingly rare due to the fungus parasite (*Cryphonectria parasitica*) that is responsible for the chestnut blight disease, which has adversely affected many *Castanea* spp. populations in the United States (Tucker 1983, pp. 8-9; Steyermark 1963, p. 531). Paillet (1991, p. 10; 1993, pp. 261-262) noted an area on the Ozark National Forest that was cut 4-5 years previously that was full of broad chinquapin crowns and the ground littered with burs from the summer's nut crop. Based on Paillet's observation nearly 20 years ago, it is plausible to assume that *Castanea pumila* var. *ozarkensis* may produce fruit prior to succumbing to the blight at some localities. However, Paillet (1993, p. 262) reported that these sites were increasingly rare in the early 1990's.

Castanea pumila var. *ozarkensis* has been described as historically common in thin woods, edges of woods, and mid-successional woods (Tucker 1983, pp. 8-9). This tree historically occupied

canopy and subcanopy positions on a variety of habitats, including dry upland deciduous or mixed hardwood-pine communities on acid soils of ridge-tops, upper slopes adjacent to ravines and gorges, and the tops of sandstone bluffs (C. McDonald 1987, personal communication (pers. comm.)). Associated trees in these habitats include *Quercus alba* (white oak), *Quercus stellata* (post oak), *Quercus rubra* (northern red oak), *Nyssa sylvatica* (black gum), *Pinus echinata* (short-leaf pine), *Morus rubra* (mulberry), *Carya spp.* (hickories), *Ulmus americana* (American elm), and *Ostrya virginiana* (ironwood) (Steyermark 1963, p. 531; G. Tucker 1976, pers. comm.). Soil conditions typically are acid and sandstone-derived, and moisture conditions vary from mesic to dry; shade is variable (G. Tucker 1976, pers. comm.; C. McDonald 1987, pers. comm.).

Castanea pumila var. *ozarkensis* is generally fire tolerant, but sprouts may be damaged by fire (Kral 1983, p. 287). Due to blight, dead sprouts and dead stump wood may act as a fuel for fire and affect the remaining live sprouts.

Distribution and Status

Castanea pumila var. *ozarkensis* is located throughout the Interior Highlands in Arkansas (34 counties), Missouri (9 counties), and Oklahoma (8 counties)(Kratesz 1994). *Castanea pumila* var. *ozarkensis* currently remains widespread within the Interior Highlands of Arkansas and is less common and widespread within the uplands of southwestern Missouri and eastern Oklahoma. Localities with seed-producing trees are greatly diminished from pre-blight era. However, asexually reproducing populations still occur throughout the tree's historic distribution. Herbarium specimens are all that remains to support the existence of *Castanea pumila* var. *ozarkensis* in Alabama (four localities in the Appalachian Mountains). Data to support the abundance and distribution of *Castanea pumila* var. *ozarkensis* in the Appalachian Mountains is lacking, and researchers have been unable to find extant populations in this region. The Interior Highlands contain the only known extant populations of *Castanea pumila* var. *ozarkensis* at this time (Johnson 1988, pp. 43-45).

At present, there are greater than 300 element occurrences in the Interior Highlands. Individual site records commonly report multiple *Castanea pumila* var. *ozarkensis* sprout clumps. These vary from tens to hundreds of individual sprout clumps at an element occurrence record site (Kratesz 1994). At present, *Castanea pumila* var. *ozarkensis* occurrence and status is tracked by all of the State heritage programs and the U.S. Department Agriculture's Forest Service within the tree's range.

Evaluation of Information for this Finding

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

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

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

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

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

In making this 90–day finding, we evaluated whether information regarding threats to the *Castanea pumila* var. *ozarkensis,* as presented in the petition and other information available in our files, is substantial, thereby indicating that the petitioned action may be warranted. Our evaluation of this information is presented below.

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

Information Provided in the Petition

The petition cites several factors regarding the destruction and modification of *Castanea pumila* var. *ozarkensis* habitat, including:

(1) The range of *Castanea pumila* var. *ozarkensis* has been reduced over past times (geologic time scale) because it once could have occupied the entire Lower Mississippi Valley. Based on the petitioner's personal observations, several million acres of suitable habitat in the Interior Highlands on both public (particularly on national forest lands in the region) and private lands have been lost since the 1960s, mostly due to anthropogenic (human) disturbance.

(2) Late successional habitats have been reduced through "pine plantation style" forest management, which has reduced habitat quality through prescribed burning (including the fact that vigorous *Castanea pumila* var. *ozarkensis* growth did not occur at prescribed burn sites studied by the petitioner in Oklahoma).

(3) *Castanea pumila* var. *ozarkensis* is a late successional obligate as it relates to seedling establishment.

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

With regard to the amount of habitat modification and alteration that has occurred within the range of *Castanea pumila* var. *ozarkensis*, we generally find that the information presented by the petition is speculative and not substantial. Further, no supporting information was presented to verify the petition's claim that *Castanea pumila* var. *ozarkensis* could have once occupied the entire Lower Mississippi Valley. Information provided in the petition and available in our files includes references to records from Louisiana, Mississippi, and Alabama. Johnson (1988, pp. 41-45) recognized *Castanea pumila* var. *ozarkensis* records from the Interior Highlands and Appalachian Mountains. While there is support for an Appalachian-Ozarkian floristic relationship, floristic relationships to the lower Mississippi Valley and Gulf Coastal Plain can only be considered speculative at this time (Johnson 1988, p. 47).

The habitat loss claims in the petition are not supported in available, peer-reviewed literature and are contrary to other existing information in our files. The Ozark–Ouachita Highlands Assessment (OOHA) 1999 Terrestrial Vegetation and Wildlife Report, prepared by a collaborative team of natural resource specialists and research scientists, examined historic and existing forest conditions throughout the Interior Highlands of Arkansas, Missouri, and Oklahoma (U.S. Forest Service 1999, section 5). The area of analysis overlaps much of the range of *Castanea pumila* var. *ozarkensis*. OOHA descriptions of vegetation cover or silvicultural practices do not indicate significant reductions in suitable habitat for *Castanea pumila* var. *ozarkensis*. Oak–hickory and oak–pine forest types continue to be common forest types in the Interior Highlands. The upland oak–hickory forest type provided the dominant cover within the region at the time of the OOHA. It covered 15 million acres (6.1 million hectares) or about 36 percent of the area. The oak–pine forest type provided the second most extensive cover. It covered 4.4 million acres (1.8 million hectares) or 11 percent of the area.

Ashe (1923) described the range of the species as "common north of the Arkansas River and westward from

Center Ridge, Arkansas, northward to southwestern Missouri and westward to the Valley of the White River." Steyermark (1963, p. 531) states that Louisiana and Mississippi are sometimes included as part of the *Castanea pumila* var. *ozarkensis* range, but specimens examined from those States have been proven not to be *Castanea pumila* var. *ozarkensis*. This is contrary to the statements made by the petitioner which states that the species occurs in Louisiana and Mississippi.

With regard to the reduction of late successional habitats, the OOHA recognized *Castanea pumila* var. *ozarkensis* as a species of viability concern, the habitat description being "woodland, fire maintained" (U.S. Forest Service 1999, p. 137). Loss of natural fire regimes is recognized as a threat to the health and sustainability of oak–hickory and oak–pine ecosystems in which *Castanea pumila* var. *ozarkensis* occurs (Spetich 2004, pp. 49-50 and 65-66). However, given the understanding of fire as it relates to ecosystem health and sustainability within most of the habitats where *Castanea pumila* var. *ozarkensis* is known to occur, we cannot conclude that prescribed burning is negatively influencing the species, even with the knowledge that individual sprout clumps may be top-killed during prescribed burns. Prescribed fire reduces fuel availability in the forest, which reduces the threat of catastrophic wildfires that are likely a greater threat to *Castanea pumila* var. *ozarkensis* than prescribed fire.

The petition claims, based on the petitioner's personal observations, that the species is dependent on mesic conditions for seedling establishment and growth. The petition also states that *Castanea pumila* var. *ozarkensis* occurs in areas with abrupt changes in topography, including talus flow margins, drainage margins, steep upper slopes, rocky outcrops, and ridge tops; he also quoted a historical reference (Palmer 1923) that stated a similar array of habitat types. These descriptions tend to be more indicative of drier type areas and not of mesic, closed canopy forest. While the species is known to occur on mesic sites, mesic site obligation is not in alignment with widely accepted ecological descriptions and dynamics known to sustain most of the forested ecosystems where this species is currently found. *Castanea pumila* var. *ozarkensis* is common in dry deciduous or mixed hardwood-pine communities. Turner (1937) said of *Castanea pumila* var. *ozarkensis,* "Although it grows better in soils fairly well supplied with moisture, it also grows on rocky, rather dry slopes and hilltops." It is most common on upland slopes and ridges, cliff margins, and talus slopes, where it is found on soils derived from sandstone, limestone, or on chert-rich, clayey soils.

The petition also states that *Castanea pumila* var. *ozarkensis* is a late seral obligate and that excessive shading contributes to branch mortality and crown retardation. These characteristics would not be expected in a species that needs late successional forest conditions for optimal growth. Tucker (1983, p. 15) stated that *Castanea pumila* var. *ozarkensis* formerly was a member of the climax community, but presently is one of the first species to regenerate following a disturbance (e.g., clear-cut, prescribed fire). Paillet (1991, p. 10; 1993, pp. 261-262) noted an area on the Ozark National Forest that was cut 4 to-5 years previously that was full of broad chinquapin crowns and the ground littered with burs from the summer's nut crop. The species requires sunlight to establish seedlings, which, again, is not characteristic of late successional forest conditions that were fire-maintained. Information in our files does not support the petitioner's claim that this species is a late seral obligate. The species is found on a variety of aspects and forest community types on the Ouachita and Ozark National Forests. Information in our files indicates that *Castanea pumila* var. *ozarkensis* prefers forests at an early seral stage.

Summary of Factor A

The information in our files does not support the petition's claim that *Castanea pumila* var. *ozarkensis* has suffered a significant range reduction. While there is support for an Appalachian-Ozarkian floristic relationship, floristic relationships to the lower Mississippi Valley and Gulf Coastal Plain can only be considered speculative at this time (Johnson 1988, p. 47). *Castanea pumila* var. *ozarkensis* is still widespread and abundant throughout the majority of its extant range in the Interior Highlands, particularly on public lands.

The information in our files also does not support the petition's claim that *Castanea pumila* var. *ozarkensis* habitat has been reduced due to prescribed burning. The habitat description for *Castanea pumila* var. *ozarkensis* is described as "woodland, fire maintained" (U.S. Forest Service 1999, p. 137). Loss of natural fire regimes is recognized as a threat to the health and sustainability of oak–hickory and oak–pine ecosystems in which *Castanea pumila* var. *ozarkensis* occurs (Spetich 2004, pp. 49-50 and 65-66).

In addition, information in our files does not support the petition's claim that *Castanea pumila* var. *ozarkensis* habitat and seedling establishment have been reduced due to a reduction in late successional and mesic habitat. Tucker (1983, p. 15) stated that *Castanea pumila* var. *ozarkensis* formerly was a member of the climax community, but presently is one of the first species to regenerate following a disturbance (e.g., clear-cut, prescribed fire). Paillet (1991, p. 10; 1993, pp. 261-262) noted an area on the Ozark National Forest that was cut 4 to 5 years previously that was full of broad chinquapin crowns and the ground littered with burs from the summer's nut crop.

In summary, we find that the information provided in the petition, as well as other information in our files, does not present substantial scientific or commercial information indicating that the petitioned action may be warranted due the present or threatened destruction, modification, or curtailment of habitat or range. However, we will further investigate the potential threat of the present or threatened destruction, modification, or curtailment of habitat or range in our status review for this species.

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

No information was presented in the petition, or is available in our files, to indicate that *Castanea pumila* var. *ozarkensis* may warrant listing due to overutilization for commercial, recreational, scientific, or educational purposes.

C. Disease or Predation

Information Provided in the Petition

The petition cites two diseases that threaten *Castanea pumila* var. *ozarkensis* populations:

(1) Ink disease, caused by *Phytopthora cinnamomi,* is known to attack the root systems of all North American *Castanea* species. *Phytopthora cinnamomi* spores spread through groundwater, and thus is most prevalent in low-lying areas. The petition did not identify it as an immediate threat because the current range of *Castanea pumila* var. *ozarkensis* is restricted to upland areas of the Interior Highlands. *Phytopthora cinnamomi* is prevalent in many areas of the Gulf Coastal Plain, and the petitioner believes that this portion of *Castanea pumila* var. *ozarkensis*' historic range is presently unsuitable for

occupation due to the disease infestation.

(2) Chestnut blight, caused by the fungal parasite *Cryphonectria parasitica*, attacks the stems of all North American *Castanea* species but is not directly pathogenic to the root system. Since its introduction, chestnut blight has severely impacted *Castanea pumila* var. *ozarkensis* throughout the Interior Highlands by causing the loss of the majority of mature stems. The species continues to survive because the root systems have remained intact and continue to sprout new stems that are eventually killed by the chestnut blight.

An unpublished, non-peer-reviewed report written by the petitioner described personal observations of *Castanea pumila* var. *ozarkensis* on a portion of the Ouachita National Forest in LeFlore County, Oklahoma. The report described the petitioner's assessments of the life expectancy of blight-affected sprout clumps of various sizes with assumptions of varying degrees of blight resistance. The report concluded that based on observations, environmental factors also had contributed to the decline of the species. The report also describes the petitioner's assessment that factors such as genetic resistance and early maturity of stems have not halted seed production of *Castanea pumila* var. *ozarkensis*, at the evaluated sites. The petitioner indicates that chestnut blight may not present an insurmountable threat to the survival of the species.

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

We are not aware of any information to indicate that ink disease poses a significant threat to *Castanea pumila* var. *ozarkensis* at this time. On the other hand, information provided in the petition and in our files does indicate that chestnut blight is widely recognized as the dominant threat to *Castanea pumila* var. *ozarkensis*. Chestnut blight was first noticed in American chestnut trees (*Castanea dentata*) in New York City in 1904. Over a period of about 20 years, the blight spread throughout the range of the American chestnut, reducing this important forest tree to a multiple-stemmed shrub. The fungus enters wounds in the bark and grows under the bark, eventually killing the cambium all the way around the infected area. This results in the death of most of the above-ground portion of the tree. After top-kill, sprouts develop at the base of the tree from dormant buds. These sprouts grow, become infected, and die, and the process is repeated (Anagnostakis 2000, p. 1). The blight affects all North American *Castanea* species, and its effect on *Castanea pumila* var. *ozarkensis* was noted beginning in the 1940s.

Castanea pumila var. *ozarkensis*, like the American chestnut (*Castanea dentata*), has sprout clumps that are capable of persisting in the understory of established woodlands for many years without seed production. *Castanea pumila* var. *ozarkensis* sprouts are released when seed production is suppressed. In one Arkansas locality, the sprouts experience rapid growth and produced seeds within a few years of release (Paillet, 1993, p. 267). However, localities with fruit production were increasingly rare by the 1970's (Tucker, 1983, pp. 9, 16). Tucker (1983, pp. 9, 16) could locate only two sexually reproducing populations out of several hundred localities investigated in the Interior Highlands from 1967 – 1983.

Castanea pumila var. *ozarkensis* also responds favorably to forest thinning. Paillet (2002, pp. 1522, 1523) observed *Castanea pumila* var. *ozarkensis* sprouts dominating the biomass of recent clear-cuts in the Ozark Mountains of northern Arkansas. In the absence of competition, *Castanea pumila* var. *ozarkensis* is often able to survive several years until it becomes infected with the blight. It persists despite the blight, mainly because of its ability to sprout new stems asexually as opposed to sexual reproduction through fruit production. Sexually reproducing stands were increasingly rare by the early 1970's (Tucker, 1983, pp. 9, 16), and it is plausible to conclude that even fewer stands may persist via sexual reproduction two decades later.

Despite the shift in reproductive strategy and a shorter life span for the stems, chestnut blight has not affected the distribution and abundance of *Castanea pumila* var. *ozarkensis* in the Interior Highlands of Arkansas, Missouri, and Oklahoma. Information in our files indicates that *Castanea pumila* var. *ozarkensis* has degenerated to stands consisting mostly of stump sprouts. There have been some isolated localities in which sprouts have survived 5 or more years and produced fruit post-blight infection but indications are that these sites have become increasingly rare since the early 1990's. Tucker (1983, p. 25) states that chestnut blight is responsible for the mortality of extant sexually reproducing populations, reducing populations to primarily asexual reproduction, and that sexually reproductive populations may become extirpated.

We do not have sufficient information to substantiate the current distribution and status of sexually reproductive populations to determine whether blight infestation in *Castanea pumila* var. *ozarkensis* will result in the extirpation of these populations, which would limit all remaining populations to asexual reproduction. There also is no data in the Service's files to predict what effect the loss of sexually reproducing *Castanea pumila* var. *ozarkensis* would have on the survival of the species. Therefore, we rely on data in our files related to other *Castanea* species to use as a surrogate for comparison. Stillwell *et al.* (2003, pp. 3-4) discuss several effects to *Castanea dentata* as a consequence of chestnut blight, including from ecological changes and the diminished importance of sexual reproduction on the amount and distribution of genetic diversity in the species. First, the chestnut blight significantly alters the ecology of *Castanea* species, which may reduce the overall level of genetic diversity. Secondly, chestnut blight may affect the distribution of genetic variance within and among populations. This could occur by genetic drift from the reduced population size or from the vegetative expansion of root collars, both of which would tend to diminish genetic variance within patches.

Knowles and Grant (1981, p. 4, in Stillwell *et al.* 2003) and Mitton and Grant (1980, p. 4, in Stillwell *et al.* 2003) present contrasting information on long-lived trees and the general perception that more heterozygous individuals are less variable and better adapted in fluctuating environments. Many long-lived tree species show an excess of heterozygosity suggesting that selection favoring heterozygotes is relatively subtle and hence is more likely to have an effect over the course of a long lifespan. Subtle differences in the performance of genotypes may be magnified in importance as *Castanea* clones have aged over the last 70 plus years and even relatively small fitness effects may accumulate to have conspicuous effects on the genetics of populations (Stillwell *et al.* 2003, p. 4).

The results of Stillwell *et al.* (2003, pp. 9-11) suggest that the chestnut blight has had significant effects on the genetics of *Castanea dentata* populations. They found that a slight growth advantage for heterozygous genotypes has resulted in a profound excess of heterozygotes within populations. Studies of different age classes (seeds, seedlings, and stands of differing age) show an increase in heterozygosity with increasing age within other tree species. The difference observed by Stillwell *et al.* (2003, pp. 9-11) is that all extant *Castanea dentata*

genotypes are more than 70 years old and many that succumbed to the blight as mature canopy trees are much older. Therefore, as selection favors a population of heterozygous individuals, there are no new recruits to restore the population toward Hardy-Weinberg equilibrium (a constant state of genetic variation in a population from one generation to the next in the absence of disturbance). Prolonged absence of sexual reproduction in *Castanea dentata* has resulted in a change in population genetics.

The high mortality of Castanea dentata stems in conjunction with near total elimination of sexual reproduction could have resulted in the loss of some (mostly rare) alleles (Loveless and Hamrick 1984; Leberg 1992 in Stillwell *et al*). It is not clear, however, whether this slightly lower genetic diversity is a result of the blight epidemic...Huang *et al* 1998 suggested that the low genetic diversity of the American chestnut resulted in the high susceptibility to attack by blight, rather than that the low genetic diversity was a direct consequence of the blight pandemic, and that other Castanea species with more diverse allozyme variation are less susceptible to epidemics. In the absence of pre-blight genetic population structure, it is difficult to make any definitive statement on changes in genetic diversity due to the chestnut blight pandemic (Stillwell *et al*. 2003, p. 10).

Summary to Factor C

Information provided by the petitioner and in our files indicates that ink disease does not pose a significant threat now or in the foreseeable future to the continued existence of extant *Castanea pumila* var. *ozarkensis* populations. Information in our files supports the petition's assertion that chestnut blight may pose a substantial threat to the species and that chestnut blight is the greatest threat to the continued existence of *Castanea pumila* var. *ozarkensis*.

While the personal observations cited by the petitioner of *Castanea pumila* var. *ozarkensis* described on a portion of the Ouachita National Forest are informative and useful in understanding the extent of chestnut blight occurrence in the western extreme of the species' range, the information does not indicate any overall change in the species' range, distribution, or abundance in spite of the continued existence of disease threats that have been acknowledged in the past and continue at present. However, information in our files indicates that chestnut blight has adversely affected the biology (sexually reproductive populations are greatly diminished from pre-blight status) of *Castanea pumila* var. *ozarkensis* and other *Castanea* species in the past 70 years since infestation occurred and may threaten the reproductive status and genetic diversity of extant populations. While the overall level of genetic diversity within and among populations of *Castanea pumila* var. *ozarkensis* is not well understood, there is genetic information on other *Castanea* species to suggest that ecological changes and the diminished prevalence of sexual reproduction may reduce the amount and distribution of genetic diversity.

In summary, the chestnut blight has disrupted the life cycle of *Castanea pumila* var. *ozarkensis* by reducing the sexual reproduction to isolated areas, forcing the species to survive mainly by asexual reproduction. The blight has threatened the reproductive status and may threaten the genetic diversity of extant populations. We find that the information provided in the petition, as well as other information in our files, presents substantial scientific or commercial information indicating that the petitioned action may be warranted due to disease from chestnut blight.

D. Inadequacy of Existing Regulatory Mechanisms

No information was presented in the petition, or is available in our files, to indicate that *Castanea pumila* var. *ozarkensis* may warrant listing due to the inadequacy of existing regulatory mechanisms.

E. Other Natural or Manmade Factors Affecting the Species' Continued Existence

No information was presented in the petition, or is available in our files, to indicate that *Castanea pumila* var. *ozarkensis* may warrant listing due to other natural or manmade factors affecting the species' continued existence.

Finding

On the basis of our evaluation of the information presented under section 4(b)(3)(A) of the Act, we have determined that the petition presents substantial scientific or commercial information indicating that listing *Castanea pumila* var. *ozarkensis* throughout its entire range may be warranted due to disease or predation (Factor C). Following a review of the information presented in the petition and readily available in our files, we have determined that substantial information was not presented or available that suggests listing may be warranted due to the present or threatened destruction, modification or curtailment of habitat or range (Factor A). The petition did not include any information related to Factors B, D, and E. Because we have found that the petition presents substantial information indicating that listing *Castanea pumila* var. *ozarkensis* may be warranted, we are initiating a status review to determine whether listing *Castanea pumila* var. *ozarkensis* under the Act is warranted.

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

References Cited

A complete list of references cited is available on the Internet at *http://www.regulations.gov* and upon request from the Arkansas Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this notice are the staff members of the Arkansas Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authority

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

Dated: May 19, 2010.

Gregory E. Siekaniec,

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

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