

recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption and be free of any defects or viruses.

Docket: All documents in the docket are listed in the <http://www.regulations.gov> index. Although listed in the index, some information is not publicly available, e.g., CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically at <http://www.regulations.gov> or in hard copy at: U.S. EPA Region 6, 1445 Ross Avenue, Suite 700, Dallas, Texas 75202-2733, (214) 665-7362, by appointment only Monday through Friday 9 a.m. to 12 p.m. and 1 p.m. to 4 p.m.; or Jacksonville City Hall, 1 Municipal Drive, Jacksonville, AR 72076, (501) 982-3181, Monday through Friday, 8 a.m. to 5 p.m.; Arkansas Department of Environmental Quality (ADEQ), 5301 Northshore Drive, North Little Rock, Arkansas 72118, (501) 682-0744, Monday through Friday 8 a.m. to 4:30 p.m.

FOR FURTHER INFORMATION CONTACT: Shawn Ghose M.S., P.E., Remedial Project Manager (RPM), U.S. EPA Region 6 (6SF-RA), 1445 Ross Avenue, Dallas, TX 75202-2733, ghose.shawn@epa.gov 665-6782 or 800-533-3508.

SUPPLEMENTARY INFORMATION: In the "Rules and Regulations" Section of today's **Federal Register**, we are publishing a direct final Notice of Deletion of the Rogers Road Municipal Landfill Superfund because we view this as a noncontroversial revision and anticipate no adverse comment. We have explained our reasons for this deletion in the preamble to the direct final Notice of Deletion, and those reasons are incorporated herein. If we receive no adverse comment(s) on this deletion action, we will not take further action on this Notice of Intent to Delete. If we receive adverse comment(s), we will withdraw the direct final Notice of Deletion, and it will not take effect. We will, as appropriate, address all public comments in a subsequent final Notice of Deletion based on this Notice of Intent to Delete. We will not institute a

second comment period on this Notice of Intent to Delete. Any parties interested in commenting must do so at this time.

For additional information see the Direct Final Notice of Deletion located in the "Rules" section of this **Federal Register**.

List of Subjects in 40 CFR Part 300

Environmental protection, Air pollution control, Chemicals, Hazardous waste, Hazardous substances, Intergovernmental relations, Penalties, Reporting and recordkeeping requirements, Superfund, Water pollution control, Water supply.

Authority: 33 U.S.C. 1321(c)(2); 42 U.S.C. 9601-9657; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p. 351; E.O. 12580, 52 FR 2923; 3 CFR, 1987 Comp., p. 193.

Dated: August 4, 2010.

Lawrence E. Starfield,

Acting Regional Administrator, EPA Region 6.

[FR Doc. 2010-19925 Filed 8-11-10; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2010-0059; 92220-1113-0000-C6]

RIN 1018-AW26

Endangered and Threatened Wildlife and Plants; Removing the Tennessee Purple Coneflower From the Federal List of Endangered and Threatened Plants

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule; availability of draft post-delisting monitoring plan.

SUMMARY: Under the authority of the Endangered Species Act of 1973, as amended (Act), we, the U.S. Fish and Wildlife Service (Service), propose to remove the plant *Echinacea tennesseensis* (Tennessee purple coneflower) from the Federal List of Endangered and Threatened Plants due to recovery. This action is based on a thorough review of the best available scientific and commercial data, which indicate that this species' status has improved to the point that *E. tennesseensis* is not likely to become endangered within the foreseeable future throughout all or a significant portion of its range. Our review of the status of this species shows that all of the threats to the species have been

eliminated or significantly reduced, adequate regulatory mechanisms exist, and populations are stable. We also announce the availability of the draft post-delisting monitoring plan. This proposed rule completes the 5-year status review for the species, initiated on September 21, 2007.

DATES: To ensure that we are able to consider your comments on this proposed rule, they must be received or postmarked on or before October 12, 2010. We must receive requests for public hearings, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section, by September 27, 2010.

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

- **Federal eRulemaking Portal:** <http://www.regulations.gov>. Search for docket number FWS-R4-ES-2010-0059 and then follow the instructions for submitting comments.

- **U.S. mail or hand-delivery:** Public Comments Processing, Attn: FWS-R4-ES-2010-0059; Division of Policy and Directives Management; U.S. Fish and Wildlife Service; 4401 N. Fairfax Drive, Suite 222; Arlington, VA 22203.

We will not accept comments by e-mail or fax. We will post all comments on <http://www.regulations.gov>. This generally means that we will post any personal information you provide us (see the Public Comments section below for more information).

FOR FURTHER INFORMATION CONTACT: Mary Jennings, Field Supervisor, U.S. Fish and Wildlife Service, Cookeville Field Office, 446 Neal Street, Cookeville, TN 38501; telephone (931) 528-6481. Individuals who are hearing-impaired or speech-impaired may call the Federal Information Relay Service at (800) 877-8339 for TTY assistance 24 hours a day, 7 days a week.

SUPPLEMENTARY INFORMATION:

Public Comments

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and effective as possible. Therefore, we request comments or information from other concerned government agencies, the scientific community, industry, or other interested parties concerning this proposed rule. The comments that will be most useful and likely to influence our decisions are those that are supported by data or peer-reviewed studies and those that include citations to, and analyses of, applicable laws and regulations. Please make your comments as specific as possible and explain the

basis for them. In addition, please include sufficient information with your comments to allow us to authenticate any scientific or commercial data you reference or provide. In particular, we seek comments concerning the following:

(1) Biological data concerning *Echinacea tennesseensis*.

(2) Relevant data concerning any threats (or lack thereof) to *Echinacea tennesseensis*, including but not limited to:

(a) Whether or not climate change is a threat to the species;

(b) What regional climate change models are available, and whether they are reliable and credible to use as step-down models for assessing the effect of climate change on the species and its habitat; and

(c) The extent of Federal and State protection and management that would be provided to *Echinacea tennesseensis* as a delisted species.

(3) Additional information concerning the range, distribution, population size, and trends of *Echinacea tennesseensis*, including the locations of any additional populations of this species.

(4) Current or planned activities within the geographic range of *Echinacea tennesseensis* colonies that may impact or benefit the species.

(5) The draft post-delisting monitoring plan.

Please note that 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, as section 4(b)(1)(A) of the Endangered Species Act of 1973, as amended (Act; 16 U.S.C. 1531 *et seq.*) directs that a determination 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.”

Prior to issuing a final rule on this proposed action, we will take into consideration all comments and any additional information we receive. Such information may lead to a final rule that differs from this proposal. All comments and recommendations, including names and addresses, will become part of the administrative record.

You may submit your comments and materials concerning this proposed rule by one of the methods listed in the **ADDRESSES** section. We will not consider comments sent by e-mail or fax or to an address not listed in the **ADDRESSES** section. If you submit a comment via <http://www.regulations.gov>, your entire comment—including any personal

identifying information—will be posted on the Web site. Please note that comments posted to this Web site are not immediately viewable. When you submit a comment, the system receives it immediately. However, the comment will not be publicly viewable until we post it, which might not occur until several days after submission.

If you mail or hand-deliver a hardcopy comment that includes personal identifying information, you may request at the top of your document that we withhold this information from public review. However, we cannot guarantee that we will be able to do so. To ensure that the electronic docket for this rulemaking is complete and all comments we receive are publicly available, we will post all hardcopy submissions on <http://www.regulations.gov>.

In addition, comments and materials we receive, as well as supporting documentation used in preparing this proposed rule will be available for public inspection in two ways:

(1) You can view them on <http://www.regulations.gov>. In the Enter Keyword or ID box, enter FWS–R4–ES–2010–0059, which is the docket number for this rulemaking.

(2) You can make an appointment, during normal business hours, to view the comments and materials in person at the U.S. Fish and Wildlife Services’ Cookeville Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Public Availability of Comments

Before including your address, phone number, e-mail address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

Public Hearing

Section 4(b)(5)(E) of the Act provides for one or more public hearings on this proposal, if requested. We must receive requests for public hearings, in writing, at the address shown in the **FOR FURTHER INFORMATION CONTACT** section by the date shown in the **DATES** section of this document. We will schedule public hearings on this proposal, if any are requested, and announce the dates, times, and places of those hearings, as well as how to obtain reasonable accommodations, in the **Federal Register** at least 15 days before the first hearing.

Previous Federal Actions

Section 12 of the Act directed the Secretary of the Smithsonian Institution to prepare a report on those plants considered to be endangered, threatened, or extinct. On July 1, 1975, the Service published a notice in the **Federal Register** (40 FR 27873) accepting the Smithsonian report as a petition to list taxa named therein under section 4(c)(2) [now 4(b)(3)] of the Act and announcing our intention to review the status of those plants. *Echinacea tennesseensis* was included in that report (40 FR 27880). Tennessee purple coneflower is the common name for *E. tennesseensis*; however, we will primarily use the scientific name of this species throughout this proposed rule to clarify taxonomic issues or the legal status of the plant.

On June 16, 1976, we published a proposed rule in the **Federal Register** (41 FR 24524) to designate approximately 1,700 vascular plant species, including *Echinacea tennesseensis*, as endangered under section 4 of the Act. On June 6, 1979, we published a final rule in the **Federal Register** (44 FR 32604) designating *E. tennesseensis* as endangered. The final rule identified the following threats to *E. tennesseensis*: loss of habitat due to residential and recreational development; collection of the species for commercial or recreational purposes; grazing; no State law protecting rare plants in Tennessee; and succession of cedar glade communities in which *E. tennesseensis* occurred. On February 14, 1983, we published the Tennessee Coneflower Recovery Plan (Service 1983, 41 pp.), a revision of which we published on November 14, 1989 (Service 1989, 30 pp.). On September 21, 2007, we initiated a 5-year status review of this species (72 FR 54057). This rule, once finalized, will complete the status review.

For additional details on previous Federal actions, see discussion under the Recovery Plan and Recovery Plan Implementation sections below.

Species Information

A member of the sunflower family (Asteraceae), *Echinacea tennesseensis* is a perennial herb with a long and fusiform (*i.e.*, thickened toward the middle and tapered towards either end), blackened root. In late summer, the species bears showy purple flower heads on one-to-many hairy branches. Linear to lance-shaped leaves up to 20 centimeters (cm; 8 inches (in.)) long and 1.5 cm (0.6 in.) wide arise from the base of *E. tennesseensis* and are beset with coarse hairs, especially along the

margins. The ray flowers (*i.e.*, petals surrounding the darker purple flowers of the central disc) are pink to purple and spread horizontally or arch slightly forward from the disc to a length of 2–4 cm (0.8–1.8 in.).

The following description of this species' life history is summarized from Hemmerly (1986, pp. 193–195): seeds are shed from plants during fall and winter and begin germinating in early March of the following year, producing numerous seedlings by late March. Most of the seedling growth occurs during the first 6 or 7 weeks of the first year, during which plants will grow to a height of up to 2–3 cm (0.8–1.2 in.). Plants remain in a rosette stage and root length increases rapidly during these weeks. Flowering stems and seeds are produced on some plants by the end of the second season. Individuals of *Echinacea tennesseensis* can live up to at least 6 years, but the maximum lifespan is probably much longer (Baskauf 1993, p. 37).

Echinacea tennesseensis was first collected in 1878 in Rutherford County, Tennessee, by Dr. A. Gatteringer and later described by Beadle (1898, p. 359) as *Brauneria tennesseensis* on the basis of specimens collected by H. Eggert in 1897 from "a dry, gravelly hill" near the town of LaVergne. Fernald (1900, pp. 86–87) did not accept Beadle's identification of *B. tennesseensis* as a distinct species, instead he merged it with the more widespread *E. angustifolia*. This treatment was upheld by many taxonomists until McGregor (1968, pp. 139–141) classified the taxon as *E. tennesseensis* (Beadle) Small, based on examination of materials from collections discussed above and from collections by R. McVaugh in 1936. As McGregor (1968, p. 141) was unable to locate any plants while conducting searches during the months of June through August, 1959–1961, he concluded that the species was very rare or possibly extinct in his monograph of the genus *Echinacea*. The species went unnoticed until its rediscovery in a cedar glade in Davidson County, Tennessee as reported by Baskin *et al.* (1968, p. 70), and subsequently in Wilson County, Tennessee by Quarterman and Hemmerly (1971, pp. 304–305), who also noted that the area believed to be the type locality (Rutherford County) for the species was destroyed by the construction of a trailer park.

More recently, Binns *et al.* (2002, pp. 610–632) revised the taxonomy of the genus *Echinacea* and in doing so reduced *E. tennesseensis* to one of five varieties of *E. pallida*. Their taxonomic treatment considers *E. pallida* var. *tennesseensis* (Beadle) Small to be a

synonym of their *E. tennesseensis* (Beadle) Binns, B. R. Baum, & Arnason, comb. nov. (Binns *et al.* 2002, p. 629). However, this has not been unanimously accepted among plant taxonomists (Estes 2008, pers. com.; Weakley 2008, pp. 139–140). Kim *et al.* (2004) examined the genetic diversity of *Echinacea* species and their results conflicted with the division of the genus by Binns *et al.* (2002, pp. 617–632) into two subgenera, *Echinacea* and *Pallida*, one of which—*Echinacea*—included only *E. purpurea*. Mechanda *et al.* (2004, p. 481) concluded that their analysis of genetic diversity within *Echinacea* only supported recognition of one of the five varieties of *E. pallida* that Binns *et al.* (2002, pp. 626–629) described, namely *E. pallida* var. *tennesseensis*. While Mechanda *et al.* (2004, p. 481) would also reduce *E. tennesseensis* from specific to varietal status, the conflicting results between these two investigations point to a lack of consensus regarding the appropriate taxonomic rank of taxa within the genus *Echinacea*. Because clear acceptance of the taxonomic revision by Binns *et al.* (2002, pp. 610–632) is lacking, and Flora of North America (http://www.efloras.org/florataxon.aspx?flora_id=1&taxon_id=250066491, accessed December 3, 2009) and a flora under development by Weakley (2008, pp. 139–140) both retain specific status for *E. tennesseensis*, we will continue to recognize *E. tennesseensis* as a species during this rulemaking process until a change in the best available scientific data indicates we should do otherwise.

Echinacea tennesseensis is restricted to limestone barrens and cedar glades of the Central Basin, Interior Low Plateau Physiographic Province, in Davidson, Rutherford, and Wilson Counties in Tennessee (Tennessee Department of Environment and Conservation (TDEC) 2006, p. 2). These middle Tennessee habitats typically occur on thin plates of Lebanon limestone that are more or less horizontally bedded, though interrupted by vertical fissures in which sinkholes may be readily formed (Quarterman 1986, p. 124). Somers *et al.* (1986, pp. 180–189) described seven plant community types from their study of 10 cedar glades in middle Tennessee. They divided those communities into xeric (dry) communities, which occurred in locations with no soil or soil depth less than 5 cm (2 in.), and subxeric (moderately dry) communities that occurred on soils deeper than 5 cm (2 in.) (Somers *et al.* 1986, p. 186). Quarterman (1986, p. 124) noted that soil depths greater than 20 cm (8 in.) in the vicinity of cedar glades tend to

support plant communities dominated by eastern red cedar (*Juniperus virginiana*) and other woody species. Somers *et al.* (1986, p. 191) found *E. tennesseensis* in four of the community types they classified, but could not determine the fidelity of the species to a particular community type because it only occurred on three of the glades they studied and was infrequently encountered in plots within those sites. The communities where *E. tennesseensis* occurred spanned two xeric and two subxeric types. The xeric community types, named for the dominant species that either alone or combined constituted greater than 50 percent cover, were the (1) *Nostoc commune* (blue-green algae)–*Sporobolus vaginiflorus* (poverty dropseed) and (2) *Dalea gatteringeri* (purpletassels) communities. The subxeric types were the (1) *S. vaginiflorus* and (2) *Pleurochaete squarrosa* (square pleurochaete moss) communities. Mean soil depths across these communities ranged from 4.1 to 7.7 cm (1.6 to 3.0 in.) (Somers *et al.* 1986, pp. 186–188).

Echinacea tennesseensis was only known from three locations, one each in Davidson, Rutherford, and Wilson Counties, when the species was listed as endangered in 1979 (44 FR 32604; June 6, 1979). In 1989, when the species' recovery plan was completed, there were five extant populations ranging in size from approximately 3,700 to 89,000 plants and consisting of one to three colonies each (Clebsch 1988, p. 14; Service 1989, p. 2). The recovery plan defined a population as a group of colonies in which the probability of gene exchange through cross pollination is high, and a colony was defined as all *E. tennesseensis* plants found at a single site that are separated from other plants within the population by unsuitable habitat (Service 1989, p. 1). While analysis of genetic variability within *E. tennesseensis* did not reveal high levels of differentiation among these populations (Baskauf *et al.* 1994, p. 186), recovery efforts have been implemented and tracked with respect to these geographically defined populations. The geographic distribution of these populations and their colonies was updated in a TDEC (1996, Appendix I) status survey to include all known colonies at that time, including those from a sixth population introduced into glades at the Stones River National Battlefield in Rutherford County. For the purposes of this proposed rule, we have followed these population delineations and have assigned most colonies that have been

discovered since the status survey was completed to the geographically closest population.

The six *Echinacea tennesseensis* populations occur within an approximately 400 square kilometer (km²; 154 square miles (mi²)) area and include between 2 and 11 colonies each. Surveys conducted by TDEC and the Service in 2005 confirmed the presence of *E. tennesseensis* at 36 colonies, and the number of flowering stems in each was counted (TDEC 2006, pp. 4–5). Fifteen of these are natural colonies; the remaining 21 have been established through introductions for the purpose of recovering *E. tennesseensis* (TDEC 1991, pp. 3–7; TDEC 1996, Appendix I; Lincicome 2008, pers. com.). Three of the 21 introduced colonies constitute the sixth population that was established at a Designated State Natural Area (DSNA) in the Stones River National Battlefield (TDEC 1996, Appendix I).

We do not consider 2 of the 21 introduced colonies as contributing to recovery and do not include them in our analysis of the current status of *E. tennesseensis*. One of these two excluded colonies is located in Marshall County, well outside of the known range of the species. The other excluded colony is located in Rutherford County, and is believed to contain hybrids with *E. simulata* (see the Recovery Plan Implementation section below for additional information). Excluding these 2 colonies brings the number of introduced colonies considered for recovery to 19 and the total number of colonies to 34. However, an additional introduced colony that was not monitored during 2005, but for which TDEC maintains an element occurrence record, brings the number of introduced colonies we consider here to 20 and the total number of colonies considered for this proposed rulemaking to 35.

In reviewing the 2006 TDEC report summarizing results of the 2005 surveys, we discovered computational errors in the reported estimates of flowering adults and total individuals based on the number of flowering stems counted (TDEC 2006, pp. 4–5, Table 2). We reanalyzed those data to provide revised estimates after consulting with TDEC, but cite their 2006 report throughout this proposed rule because it is the source of data for flowering stem counts that were used to estimate colony sizes. To generate revised estimates of the number of flowering adults and total individuals, we used the number of flowering stems reported in Table 2 of TDEC (2006, pp. 4–5). Based on analyses by TDEC (2006, pp. 3–4) to estimate ratios of flowering

stems to numbers of individual flowering adults and juveniles (discussed in further detail under number 5 in the Recovery Plan Implementation section below), we then (1) divided the number of flowering stems by 1.75 to estimate the number of flowering adults, and (2) multiplied the estimated number of adults by 14 to estimate the number of juvenile plants. The estimated total number of individuals is the sum of the number of flowering adults and number of juvenile plants. The revised estimates of existing *E. tennesseensis* populations and colonies, shown in Table 1 below, include information on whether each colony was natural or introduced. Summarizing the data in Table 1, natural colonies, or those not known to have been established through introductions, included 83,895 flowering stems in 2005 (TDEC 2006, p. 6), which translated to an estimated 47,941 individual flowering plants and 719,101 total individuals, including juveniles (*i.e.*, non-flowering plants with leaves greater than 2 cm (0.78 in) length) and seedlings (*i.e.*, plants with leaves less than 2 cm (0.78 in)). Introduced colonies, excluding the two colonies we do not consider as contributing to recovery (as mentioned above), accounted for 23,454 flowering stems, and an estimated 13,402 individual flowering plants and 201,178 total individuals (TDEC 2006, p. 6). Natural colonies constituted approximately 78 percent of the total individuals, and introduced colonies constituted approximately 22 percent. In this proposed rule, we use the colony numbers assigned by TDEC (1996, Appendix I) and have assigned additional colony numbers sequentially to those colonies that have been discovered since that report was issued. In some instances, there are gaps evident in the sequence of colony numbers discussed, representing colonies that have been documented in the past but that were either extirpated or of unknown status at the time of this proposed rule.

Recovery Plan

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. The Act directs that, to the maximum extent practicable, we incorporate into each plan:

(1) Site-specific management actions as may be necessary to achieve the plan's goals for conservation and survival of the species;

(2) Objective, measurable criteria which, when met, would result in a determination in accordance with the provisions of section 4 of the Act, that the species be removed from the Federal List of Endangered and Threatened Wildlife and Plants (List); and

(3) Estimates of the time required and cost to carry out the plan's goal and to achieve intermediate steps toward that goal.

However, revisions to the List (adding, removing, or reclassifying a species) must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is endangered or threatened (or not) because of one or more of five threat factors. Therefore, recovery criteria must indicate when a species is no longer endangered or threatened by any of the five factors. In other words, objective, measurable criteria, or recovery criteria, contained in recovery plans must indicate when an analysis of the five threat factors under 4(a)(1) would result in a determination that a species is no longer endangered or threatened. Section 4(b) requires the determination made under section 4(a)(1) as to whether a species is endangered or threatened because of one or more of the five factors be based on the best available science.

Thus, while recovery plans are intended to provide guidance to the Service, States, and other partners on methods of eliminating or ameliorating threats to listed species and on criteria that may be used to determine when recovery is achieved, recovery plans are not regulatory documents and cannot substitute for the determinations and promulgation of regulations required under section 4(a)(1). Determinations to remove a species from the list made under section 4(a)(1) must be based on the best scientific and commercial data available at the time of the determination, regardless of whether these data differ from the recovery plan.

In the course of implementing conservation actions for a species, new information is often gained that requires recovery efforts to be modified accordingly. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished, yet the Service may judge that, overall, the threats have been minimized sufficiently, and the species is robust enough, to reclassify the species from endangered to threatened or perhaps delist the species.

In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan.

Likewise, information on the species may be learned that was not known at the time the recovery plan was finalized. The new information may change the extent that criteria need to be met for recognizing recovery of the species. Overall, recovery of species is a dynamic process requiring adaptive management—planning, implementing, and evaluating the degree of recovery of a species that may, or may not, fully follow the guidance provided in a recovery plan.

Thus, while the recovery plan provides important guidance on the direction and strategy for recovery, and indicates when a rulemaking process may be initiated, the determination to remove a species from the List is ultimately based on an analysis of whether a species is no longer endangered or threatened. The following discussion provides a brief review of recovery planning for *Echinacea tennesseensis*, as well as an analysis of the recovery criteria and goals as they relate to evaluating the status of the species.

The Service first approved the Tennessee Coneflower Recovery Plan on February 14, 1983 (Service 1983, 41 pp.) and revised it on November 14, 1989 (Service 1989, 30 pp.). The recovery plan includes the following delisting criterion: *Echinacea tennesseensis* will be considered recovered when there are at least five secure wild populations, each with three self-sustaining colonies of at least a minimal size. A colony will be considered self-sustaining when there are two juvenile plants for every flowering one. Minimal size for each colony is 15 percent cover of flowers over 669 square meters (m²; 800 square yards (yd²); 7,200 square feet (ft²)) of suitable habitat. Downlisting (reclassification from endangered to threatened) will be considered when each of the five secure wild populations has two colonies (Service 1989, p. iii, p. 12).

Establishing multiple populations during the recovery of endangered species serves two important functions:

- (1) Providing redundancy on the landscape to minimize the probability that localized stochastic disturbances will threaten the entire species, and
- (2) Preserving the genetic structure found within a species by maintaining the natural distribution of genetic variation among its populations.

In the case of *E. tennesseensis*, the need for multiple distinct populations to maintain genetic structure is diminished, as Baskauf *et al.* (1994, p. 186) determined that the majority of genetic variability within this species is maintained within each population rather than distributed among them. These data were not available at the time the recovery plan was completed. With respect to redundancy, the current number of *E. tennesseensis* colonies exceeds the total number required by the recovery plan for delisting this species, and we believe the current distribution of secured colonies among geographically distinct populations, which are separated by distances of 1.8 to 9 miles (2.9–14.5 km), is adequate for minimizing the likelihood that isolated stochastic disturbances would threaten the continued survival of this species.

Nonetheless, the criterion set forth in the Recovery Plan for delisting *Echinacea tennesseensis* has been met, as described below. Additionally, the level of protection currently afforded to the species and its habitat, as well as the current status of threats, are outlined below in the Summary of Factors Affecting the Species section.

There currently are six geographically defined *Echinacea tennesseensis* populations, including the five described in the recovery plan (Service 1989, pp. 3–7) and one introduced population at the Stones River National Battlefield (TDEC 1996, Appendix I). There currently are 19 colonies of *E. tennesseensis* that occur entirely or mostly on protected lands, with 5 of the populations containing three or more colonies each. The Allvan population is the lone exception, as only one of its two colonies is secure at this time. The 19 secured colonies accounted for an estimated 761,055 individual plants in 2005, or approximately 83 percent of the total species' distribution; colonies that we do not consider secure accounted for 159,224 individual plants, or approximately 17 percent of the total species' distribution.

While data on numbers of juvenile plants have not been collected from all colonies, monitoring data that have been collected for this demographic attribute have typically exceeded the value used in defining self-sustaining in the recovery plan—i.e., that there be two juvenile plants for every flowering adult in a colony. The average of this ratio in natural colonies for a given year of monitoring has ranged from 2.5 to 15.6, based on data collected at two to six sites per year in 1998, 2000, 2001, and 2004 (TDEC 2005, p. 21). Ratios of juvenile to flowering adult plants in introduced colonies were first estimated

during 2006, when the average was found to be 1.08 juveniles per adult from a single year of data collected at six introduced colonies (TDEC 2007, p. 5). Drew and Clebsch (1995, p. 67) witnessed considerable variability in mortality rates among stage classes of *Echinacea tennesseensis* measured over the periods 1987–1988 and 1988–1989, which they attributed to interannual variability in rainfall. They determined that seedlings—plants with a cumulative leaf length less than 30 cm (11.8 in)—had a high probability (*i.e.*, approximately 50 percent) of dying during drought conditions that they observed in their first year of study (Drew and Clebsch 1995, p. 66). This underscores the importance of continuing to monitor numbers of flowering adult and juvenile plants in a representative sample of both natural and introduced colonies during the post-delisting monitoring period.

The recovery plan further requires that each self-sustaining colony consist of 15 percent cover of flowers over 669 m² (800 yd², 7,200 ft²) of suitable habitat, which has not been met in all cases. However, we have determined that these percent cover and habitat area requirements do not reflect the best available scientific information. Drew and Clebsch (1995, pp. 61–67) conducted monitoring during 1987 through 1989 that established baseline conditions for five of the colonies included in the recovery plan (Service 1989, pp. 3–7); in doing so, they found that percent flower cover of *Echinacea tennesseensis* at these sites ranged from 2 to 12 percent, never exceeding the 15 percent threshold stipulated in the recovery plan. Total percent cover of all vegetation in the habitats where these colonies occur ranged from 42 to 59 percent, meaning that *E. tennesseensis* would have to have constituted 25 to 40 percent of the total vegetative cover to have occupied 15 percent flower cover in these sites. In contrast, *E. tennesseensis* only constituted between 5 and 22 percent of total vegetative cover in plots studied by Drew and Clebsch (1995, p. 63). In addition to the fact that the recovery plan articulated a requirement that was not met by the reference colonies known to exist when the plan was published, a disadvantage of using cover estimates for monitoring a rare species such as *E. tennesseensis* is that this value can change during the course of a growing season. Density estimates, on the other hand, remain fairly stable once seedlings become established following germination (Elzinga *et al.* 1998, p. 178). We believe that either total counts of plants in

various life-history classes within a colony of *E. tennesseensis* (TDEC 2005, pp. 3–4, 16–20), or sampling within a known area to generate density estimates that can be extrapolated to an entire colony, provide superior metrics over cover estimates for monitoring trends in populations.

The recovery plan requirement that each colony occupy 669 m² (800 yd², 7,200 ft²) of suitable habitat does not reflect the range of variability observed in several natural colonies that have been discovered since the recovery plan was completed. Many of these colonies are constrained by the small patches of cedar glade habitat where they occur and provide evidence of a wider range of natural variability in habitat patch size and colony size in this species that was not recognized at the time the recovery plan was published. We believe a better measure of the sustainability of both natural and introduced colonies is whether they have persisted over time and remained stable or increased in number. There currently are 31 out of the total 35 colonies that meet this definition, 19 of which are the colonies described above as secure.

Recovery Plan Implementation

The current recovery plan identifies six primary actions necessary for recovering *Echinacea tennesseensis*:

- (1) Continue systematic searches for new colonies;
- (2) Secure each colony;
- (3) Provide a seed source representative of each natural colony;
- (4) Establish new colonies;
- (5) Monitor colonies and conduct management activities, if necessary, to maintain the recovered state in each colony; and
- (6) Conduct public education projects.

Each of these recovery actions has been accomplished. The Service entered into a cooperative agreement with TDEC in 1986, as authorized by section 6 of the Act, for the conservation of endangered and threatened plant species, providing a mechanism for TDEC to acquire Federal funds that have supported much of the work described here. The State of Tennessee and other partners have provided matching funds in order to receive funding from the Service under this agreement.

Recovery Action (1): Continue Systematic Searches for New Colonies

Eight colonies of *Echinacea tennesseensis* were known to exist when the recovery plan was completed (Service 1989, pp. 3–7). TDEC and its contractors conducted searches of cedar glades, identified through the use of aerial photography and topographic maps, during the late 1980s through 1990 and found five previously

unknown colonies of *E. tennesseensis* (TDEC 1991, p.1). Two of these colonies were considered additions to the Vine population (TDEC 1991, p. 2), or population 3 as described in the recovery plan (Service 1989, pp. 4–5). One colony was considered an addition to the Mt. View population (TDEC 1991, p. 2), or population 1 of the recovery plan (Service 1989, p. 3). A fourth colony was considered an addition to the Couchville population (TDEC 1991, p. 3), or population 5 of the recovery plan (Service 1989, p. 7). The fifth colony was smaller, not in a natural habitat setting, and not assigned to any of the recovery plan populations in the TDEC report (1991, p. 2). Other colonies have been discovered during the course of surveys conducted in the cedar glades of middle Tennessee, and the number of extant natural colonies now totals 15. A summary of the currently known populations and their colonies is provided below in Table 1, and in the discussion concerning recovery action number (5). Because systematic searches for new colonies have been conducted since the completion of the recovery plan and led to the discovery of previously unknown colonies, we consider this recovery action to be completed.

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Table 1. Summary of Tennessee purple coneflower populations and colonies. Includes data on origin, whether colonies are secure or self-sustaining, flowering stem counts from 2005 surveys, and estimates generated from flowering stem count data. * = Colonies selected for post-delisting monitoring.

Population	Population Name	Colony Number	EO Number [#]	Ownership	Origin	Secure		Self-Sustaining		Flowering		Estimated	
						Y/N	Y/N	Stems	Adults	Individuals			
1	Mount View	1.1*	001	TDEC-DNA ^a	Natural	Y	Y	5,430	3,103	46,543			
		1.2	022	COE ^b	Introduced	Y	Y	252	144	2,304			
		1.4	031	COE	Introduced	Y	Y	596	341	5,109			
		TOTALS						6,278	3,588	53,956			
2	Vesta	2.1	011	Private	Natural	Y	Y	2,820	1,611	24,171			
		2.1*	006	TDEC-DNA	Natural	Y	Y	4,970	2,840	42,600			
		2.2	002	TDEC-DNA	Natural	Y	Y	4,274	2,442	36,634			
		2.3	038	TDF ^c (DSNA ^d)	Introduced	Y	Y	139	79	1,191			
		2.4	039	TDF (DSNA)	Introduced	N	N	1	1	9			
		2.6*	040	TDEC-SP	Introduced	N	Y	252	144	2,160			
		2.7	048	TDF (DSNA)	Introduced	N	N	6	3	51			
		2.8	050	TDEC-DNA	Natural	Y	Y	2,143	1,225	18,369			
		2.9*	053	Private	Introduced	N	Y	n/a	n/a	n/a			
		TOTALS						14,605	8,345	125,185			
3	Vine	3.1*	005	TDEC-DNA	Natural	Y	Y	7,555	4,317	64,757			
		3.2*	016	TDEC-DNA	Natural	Y	Y	12,457	7,118	106,774			
		3.2	015	Private	Natural	N	Y	432	247	3,703			
		3.2	012	Private	Natural	N	Y	610	349	5,229			
		3.2*	017	TDEC-DNA	Natural	Y	Y	12,457	7,118	106,774			
		3.3	014	Private	Natural	N	N	11	6	94			
		3.4*	021	Private (DSNA)	Natural	Y	Y	12,979	7,417	111,249			
		3.5	013	Private	Natural	N	Y	2,529	1,445	21,677			
3.6	018	Private	Natural	N	Y	157	90	1,346					

Population	Population Name	Colony Number	EO Number*	Ownership	Origin	Secure		Self-Sustaining Y/N	Flowering Stems	Estimated Adults	Estimated Individuals
						Y/N	Y/N				
		3.7	007	Private	Introduced	N	Y	1,705	974	14,614	
		3.8*	030	TDF	Introduced	N	Y	1,863	1,065	15,969	
		3.9	036	TDF	Introduced	Y	Y	2,744	1,568	23,520	
		3.10	033	Private	Natural	N	Y	5,374	3,071	46,063	
		3.11	041	Private	Natural	N	Y	1,935	1,106	16,586	
							TOTALS	62,808	35,891	538,355	
4	Allvan	4.2*	027	COE (DSNA)	Introduced	Y	Y	6,183	3,533	52,997	
		4.3*	047	COE	Introduced	N	Y	385	220	3,300	
							TOTALS	6,568	3,753	56,297	
5	Couchville	5.1*	010	TDEC-DNA	Natural	Y	Y	7,353	4,202	63,026	
		5.2	020	Private	Natural	N	Y	392	224	3,360	
		5.3	024	TDEC-SP	Introduced	N	Y	1,607	918	13,774	
		5.4	035	TDEC-SP	Introduced	Y	Y	863	493	7,397	
		5.4	026	TDEC-SP	Introduced	Y	Y	987	564	8,460	
		5.5*	025	TDEC-SP	Introduced	N	Y	1,300	743	11,143	
		5.6	032	TDEC-SP	Introduced	Y	Y	846	483	7,251	
		5.7	008	TDEC-SP	Natural	N	N	17	10	146	
		5.8	049	COE (DSNA)	Introduced	Y	Y	101	58	866	
							TOTALS	13,466	7,695	115,423	
6	Stones River National										
	Battlefield	6.1*	009	NPS* (DSNA)	Introduced	Y	Y	2,535	1,449	21,729	
		6.2	028	NPS (DSNA)	Introduced	Y	Y	237	135	2,031	
		6.3	029	NPS (DSNA)	Introduced	Y	Y	852	487	7,303	
							TOTALS	3,624	2,071	31,063	

Population	Population Name	Colony Number	EO Number [#]	Ownership	Origin	Secure Y/N	Self-Sustaining Y/N	Flowering Stems	Estimated Adults	Estimated Individuals
GRAND TOTALS										
								107,349	61,343	920,279

^aTennessee Department of Environment and Conservation – Division of Natural Areas Designated State Natural Areas (DSNA), ^bU.S. Army Corps of Engineers,

^cTennessee Division of Forestry, ^dDSNA that are not owned by TDEC–DNA, ^eNational Park Service.

⁺ Colony 2.9 was not monitored during 2005, because it was not reported to TDEC–DNA until 2006, at which time there were thousands of plants (Lincicome 2006, pers. com).

[#] EO Number = Element Occurrence Number assigned and tracked by Tennessee Natural Heritage Program

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Recovery Action (2): Secure Each Colony

We have assessed the security of each *Echinacea tennesseensis* colony based on observations about threats and defensibility ranks reported in the 1996 status survey of this species (TDEC 1996, Appendix I) and information in our files concerning protection actions, such as construction of fences. We consider a total of 19 colonies, including 14 of the 16 colonies within DSNAs, to be secure. Colonies 2.4 and 2.7, which lie within portions of the extensive Cedars of Lebanon State Forest DSNAs that have been threatened by past outdoor recreational vehicle (ORV) use or that are generally degraded cedar glade habitat are not secure. The State of Tennessee's Natural Area Preservation Act of 1971 (T.C.A. 11-1701) protects DSNAs from vandalism and forbids removal of endangered and threatened species from these areas. TDEC monitors these sites and protects them as needed through construction of fences or placement of limestone boulders to prevent illegal ORV access. We do not consider secure the nine colonies that exist only on private land and are not under some form of management agreement. The introduced population at the Stones River National Battlefield, designated a DSNAs in 2003, consists of three secured colonies requiring no protective management, as the National Park Service (NPS) controls access to the site.

The recovery plan states that *Echinacea tennesseensis* will be considered recovered when there are "at least five secure wild populations, each with three self-sustaining colonies of at least a minimal size." There are now 19 secure, self-sustaining colonies of *E. tennesseensis* distributed among six populations (Table 1), fulfilling the recovery plan intentions of establishing a sufficient number and distribution of secure populations and colonies to remove the risk of extinction for this species within the foreseeable future. Therefore, we consider this recovery action completed.

Recovery Action (3): Provide a Seed Source Representative of Each Natural Colony

The Missouri Botanical Garden (MOBOT), an affiliate institution of the Centers for Plant Conservation (CPC), collected accessions of seeds from each of the six populations currently in existence during 1994 (Albrecht 2008a, pers. com.). This collection is maintained according to CPC guidelines (Albrecht 2008b, pers. com.). Five of the

accessions taken by MOBOT were provided to the National Center for Genetic Resource Preservation (NCGRP) in Fort Collins, Colorado, for long-term cold storage. The NCGRP protocol is to test seed viability every 5 years for accession, and MOBOT also tests seed viability on a periodic basis and collects new material for accessions every 10 to 15 years (Albrecht 2008b, pers. com.).

While these accessions do not contain seed from every unique colony, they represent each of the populations of *Echinacea tennesseensis*. These accessions provide satisfactory material should establishment of colonies from reintroductions or additional introductions become necessary in the future, as Baskauf *et al.* (1994, pp.184-186) concluded that there is a low level of genetic differentiation among populations of *E. tennesseensis* and the origin of seeds probably is not a critical concern for establishing new populations. Therefore, we consider this recovery action completed.

Recovery Action (4): Establish New Colonies

TDEC (2006, pp. 3-6) reported flowering stem counts for 21 introduced colonies, but we have eliminated 2 of these from our analysis of the current status of *Echinacea tennesseensis*. One of these excluded colonies was introduced into a privately owned glade well outside of the known range of the species in Marshall County, consists of only a few vegetative stems, and is of doubtful viability. The other excluded, introduced colony is located in Rutherford County, approximately 7 miles from the nearest *E. tennesseensis* population, and is believed to contain hybrids with *E. simulata*. The number of flowering stems reported from the monitored colonies during 2005 ranged from 1 to 6,183.

All but 1 of the 19 introduced colonies known from 2005 have greater than 100 flowering stems, and the estimated total number of plants in these colonies ranged from 866 to 52,997 (TDEC 2006, pp. 4-5). An additional introduced colony (2.9) that was not surveyed during 2005, but contained thousands of plants in 2006 (Lincicome 2006, pers. com.), brings the number of extant introduced colonies to 20. These 20 colonies were established at various times since 1970 through the introductions of seed or transplanted individuals (TDEC 1991, pp. 3-7; TDEC 1996, Appendix I; Lincicome 2008, pers. com.), often from an undocumented or mixed origin with respect to the source populations (Hemmerly 1976, p. 81; Hemmerly 1990, pp. 1-8; TDEC 1991, pp. 4-8; Clebsch 1993, pp. 8-9).

Numerous nurseries have grown *E. tennesseensis* for the purpose of providing seeds and plants for establishing new colonies (TDEC 1991, pp. 3-8). Baskauf *et al.* (1994, pp. 184-186) determined that less than 10 percent of the genetic variability of *E. tennesseensis* is distributed among populations and concluded from this low level of differentiation that the origin of seed used in establishing new populations probably is not a critical consideration. We summarize the distribution of these introduced colonies among *E. tennesseensis* populations in the discussion concerning recovery action number (5) below. Because 20 new colonies have been established, we consider this recovery action completed.

Recovery Action (5): Monitor Colonies and Conduct Management Activities, if Necessary, To Maintain the Recovered State in Each Colony

Drew and Clebsch (1995, pp. 62-67) conducted the first monitoring of *Echinacea tennesseensis* during the summers of 1987 through 1989. They produced estimates of density, total numbers of *E. tennesseensis*, the area occupied in the primary colony of each of the five populations included in the recovery plan (Service 1989, pp. 3-7), and information on the demographic structure of these populations. TDEC monitored each of these same *E. tennesseensis* colonies one or more times in the years 1998, 2000, and 2001, and again in 2004 with some modifications to the protocol used in the previous 3 years (TDEC 2005, pp. 3-5). TDEC used monitoring data collected during 2004 (TDEC 2005, pp. 16-21) to establish that (1) the total number of adult plants in a colony could be estimated by dividing the number of flowering stems by 1.75, and (2) the number of juveniles and seedlings combined could be estimated by multiplying the estimated number of adults by 14. These relationships were established using only data from natural populations, so they might not accurately represent ratios among life-history classes in introduced populations. TDEC (2007, pp. 2-7) reported summary data for monitoring plots in four introduced colonies that were sampled during 2006, but the data have not been analyzed to establish relationships for estimating numbers of adults, juveniles, and seedlings from flowering stem counts. The average ratio of juveniles to flowering adults estimated from the 2004 monitoring was the highest ever recorded; however, this ratio provided the best data available for estimating overall colony sizes in

combination with flowering stem counts that were conducted in 2005 at all but one colony (TDEC 2006, pp. 2–5).

Because it is not possible to conduct intensive monitoring of multiple stage classes of *Echinacea tennesseensis* at all colonies in a single year, TDEC and the Service conducted flowering stem censuses of all known *E. tennesseensis* colonies in 2005 in order to derive population estimates using the approach described above. While the total stem estimates provided by TDEC (2006, pp. 4–5) and Drew and Clebsch (1995, pp. 62–67) cannot be statistically compared, they provide a basis for examining long-term persistence and apparent stability in the sizes of the colonies included in the recovery plan from observations made 16 years apart.

The Mount View population (number 1 in the recovery plan) consisted of a single known colony when the recovery plan was completed (Service 1989, p. 3). This population now includes two more colonies, one introduced, in addition to the original colony 1.1, which is located in Mount View DSNA. These three colonies are located within an approximately 2.5 km² (1 mi²) area in Davidson County. In 1987, Drew and Clebsch (1995, p. 62) estimated the size of the population at colony 1.1 to be 12,000 plants occupying an area of 830 m² (8,934 ft²). Based on number of flowering stems reported by TDEC (2006, p. 4) for this colony in 2005, there were an estimated 46,543 plants. Colony 1.2 was discovered on private land in 1990 (TDEC 1996, Appendix I, p. III), and Clebsch (1993, p. 18) estimated there were 9,057 plants occupying an area of 682 m² (7,341 ft²) in 1993. The colony on private land was bulldozed in 1999. Colony 1.2 now consists of plants introduced onto adjacent U.S. Army Corps of Engineers (COE) lands to provide long-term protection (TDEC 2003, p. 2). TDEC (2006, p. 4) estimated there were 2,304 plants at colony 1.2 in 2005. TDEC (2006, p. 5) reported 5,109 plants at colony 1.4. This colony was established on COE lands, near a public use area at J. Percy Priest Reservoir, using plants grown at Tennessee Tech University and was estimated to have consisted of 70–80 plants in 1996 (TDEC 1996, Appendix I, p. V). Each of the colonies in the Mount View population is considered secure, and the available data indicate they are self-sustaining based on the fact that they have remained stable or increased over time. While colony 1.2 was reduced in size when the private lands where it occurred were developed, the colony has increased in size since it was relocated onto COE lands and a fence

was constructed. The total number of plants estimated in the Mount View population in 2005 was 53,956.

The Vesta population (number 2 in the recovery plan) consisted of two known colonies when the recovery plan was completed (Service 1989, pp. 3–4). This population now consists of eight colonies primarily located within an area of approximately 3 km² (1.5 mi²) in Wilson County. Five of these colonies (2.3, 2.4, 2.6, 2.7, and 2.9) were introduced. Colony 2.1 occurs primarily in the Vesta Cedar Glade DSNA, with approximately 15 percent lying outside the DSNA on private lands. Drew and Clebsch (1995, p. 62) estimated that this colony consisted of 20,900 plants occupying an area of 1,420 m² (15,285 ft²) in 1987. TDEC (2006, p. 4) estimated a total of 66,771 plants at this colony in 2005. Colonies 2.2 and 2.8 are located entirely within the Vesta Cedar Glade DSNA in glade openings that are separated by forested habitat; colony 2.2 was reported in the recovery plan to have consisted of approximately 5,000 plants occupying an area of approximately 140 m² (1,500 ft²), in addition to several small clumps that Hemmerly (1976, pp. 81) established from seed. TDEC (1996, Appendix I, p. VII) estimated this colony occupied an area of 374 m² (4,026 ft²) in 1996, and estimated a total of 36,634 plants at this colony in 2005 (TDEC 2006, p. 4). Colony 2.8 is located in a glade opening, approximately one-tenth of a mile southwest of colony 2.2, and TDEC (2006, p. 5) estimated a total of 18,369 plants at this colony in 2005. Colonies 2.3, 2.4, and 2.7 are located in the Cedars of Lebanon State Forest DSNA. Colony 2.3 was planted in 1983 with seeds produced in a Tennessee Valley Authority greenhouse from Vesta population stock; in 1996, TDEC (1996, Appendix I, p. VIII) observed 50 to 100 plants occupying an area of approximately 15 m² (161 ft²). TDEC (2006, p. 5) estimated a total of 1,191 plants here in 2005. Colony 2.4 consisted of only 9 plants in 2005, most of which were seedlings (TDEC 2006, p. 5). Colony 2.7 is a small occurrence believed to have been introduced, but for which no reliable data prior to 2005 exist, at which time the colony consisted of an estimated 51 plants (TDEC 2006, p. 5). Colony 2.6 was planted at the entrance to Cedars of Lebanon State Park prior to 1982 and was observed in 1996 to include approximately 100 plants (TDEC 1996, Appendix I, p. XI); in 2005 there were an estimated 2,160 plants (TDEC 2006, p. 5). Colony 2.9 was introduced into a powerline right-of-way on private land

adjacent to Cedars of Lebanon State Forest in 1994 and was brought to TDEC's attention in 2006, at which time there were thousands of plants (Lincicome 2006, pers. com.). Of the four secure colonies (2.1, 2.2, 2.3, and 2.8) in this population, we have data to demonstrate that three have remained stable or increased over time. We do not have historic data for colony 2.8, but the large number of individuals estimated at this colony in 2005 suggests that it should be self-sustaining. The total number of plants from the Vesta population in secured and self-sustaining colonies was estimated to be 122,965 plants in 2005. Colonies that we do not consider secure accounted for an estimated 2,220 total plants in 2005.

The Vine population (number 3 in the recovery plan) consisted of three known colonies at the time the recovery plan was completed (Service 1989, pp. 4–6). This population now consists of 11 colonies located within an area of approximately 17 km² (7 mi²) in Wilson and Rutherford Counties. Three of these colonies (3.7, 3.8, and 3.9) were introduced. Approximately two-thirds of the land on which colony 3.1 is located lies within Vine Cedar Glade DSNA, with the remaining one-third on private land. Drew and Clebsch (1995, p. 62) estimated that colony 3.1 consisted of 20,200 plants occupying an area of 800 m² (8611 ft²) in 1987. TDEC (1996, Appendix I, p. XI–XII) reported the plants occupied about 760 m² in 1996, and estimated there were 64,757 plants in 2005 (TDEC 2006, p. 4). Most of colony 3.2 is located in a site acquired by TDEC using a Recovery Land Acquisition Grant and matching State funds for addition to the State's natural areas system and was estimated in the recovery plan to contain as many as 50,000 plants (Service 1989, p. 5). Data are summarized here for four element occurrences that TDEC tracks and which make up this colony. TDEC (1996, Appendix I, p. XIII) estimated a total of 94,537 plants at this colony in 1996, occupying an area of 5,889 m² (63,389 ft²); in 2005 there were an estimated 222,480 plants (TDEC 2006, p. 4). The portions of the colony that lie entirely or mostly within the protected lands contained an estimated 213,548 of these plants. Colony 3.3 is located in a privately owned site that was highly disturbed and consisted of 90 plants in 1996 (TDEC 1996, Appendix I, p. XIV). This colony contained an estimated 94 individuals in 2004, and remains a small colony of questionable viability today (TDEC 2006, p. 4) because it occurs in highly disturbed habitat. Colony 3.4 is located in the Gattinger

Glade and Barrens DSNA, which is owned by the developers of the Nashville Super Speedway who donated a conservation easement to the State of Tennessee. Clebsch (1993, p. 18) estimated there were 71,576 plants at colony 3.4 in 1993. TDEC estimated this colony occupied an area of 2,723 m² (23,310 ft²) in 1996 and estimated a total of 111,249 plants at this colony in 2005 (TDEC 2006, p. 4). While damage from off-road vehicle (ORV) use has been historically observed at this colony in the past (TDEC 1996, Appendix I, p. XV), it has not been noted since the site became a DSNA, and we consider it secure. Colonies 3.3 through 3.7 occur on private land. Clebsch (1993, p. 18) estimated a total of 15,769 plants at colony 3.5 in 1993, occupying an estimated area of 669 m² (7,201 ft²). TDEC (1996, Appendix I, p. XVI) observed that the density of plants had decreased at this colony in 1996, while the plants occupied a larger area—an estimated 1,483 m² (15,963 ft²). TDEC (2006, p. 4) estimated a total of 21,677 plants at this colony in 2005. TDEC (1996, Appendix I, p. XVII) observed about 50 plants in a 1 m² (11 ft²) area at colony 3.6 in 1996, but by 2005 the colony contained an estimated 1,346 plants. Colony 3.7 was established from seeds planted in 1978 and 1979 on private property owned by a native plant enthusiast. While many plants were killed during drought conditions in 1980, TDEC (1996, Appendix I, p. XVIII) reported that there were approximately 250 plants at this colony in 1985 and between 300 and 500 plants in 1996. TDEC (2006, p. 4) estimated a total of 14,614 plants at this colony in 2005. Colonies 3.8 and 3.9 were established from seeds planted into two sites at Cedars of Lebanon State Forest in 1990 and 1991. In 1996, TDEC (1996, Appendix I, p. XIX) counted 452 plants by surveying eight glades/barrens within the larger complex where colony 3.8 is located. TDEC (2006, p. 5) estimated a total of 15,969 plants at colony 3.8 in 2005. TDEC (1996, Appendix I, p. XX) observed approximately 200 to 300 plants occupying an estimated area of 51 m² (549 ft²) at colony 3.9 in 1996; in 2005, they estimated 23,520 total plants at this colony (TDEC 2006, p. 5). We have no data prior to 2005 for colonies 3.10 and 3.11, both of which are located on private land. In 2005, TDEC (2006, p. 5) estimated a total of 46,063 plants at colony 3.10, which is located near the Nashville Super Speedway; colony 3.11 contained an estimated 16,586 plants. These data provide evidence that the four secure colonies (*i.e.*, 3.1, 3.2, 3.4,

and 3.9) in this population have remained stable or increased over time. The total number of plants from the Vine population in secured and self-sustaining colonies was estimated to be 413,074 total plants in 2005. Colonies that we do not consider secure accounted for an estimated 125,281 total plants in 2005.

The Allvan population (number 4 in the recovery plan) consisted of one known colony (4.1) at the time the recovery plan was completed; two other colonies had been extirpated from this population (Service 1989, p. 6). This population now consists of two introduced colonies on public lands, as colony 4.1 has been lost to disturbance. Drew and Clebsch (1995, pp. 62–64) estimated a total of 3,700 plants at colony 4.1 in 1987, occupying an estimated area of 470 m² (5,059 ft²), and noted the vegetation at this site differed from the other colonies probably as a result of human disturbance. TDEC (1996, Appendix I, p. XXI) noted the poor condition of *Echinacea tennesseensis* plants during a site visit to colony 4.1 in 1996, and observed no plants at this colony in 2005 (TDEC 2006, p. 4). Colonies 4.2 and 4.3 were established from seeds and cultivated juveniles planted on COE lands at J. Percy Priest Reservoir in the years 1989 through 1991 (TDEC 1991, pp. 5–6), and earthen berms have been constructed at both sites to deter ORV traffic and reduce visibility of these colonies. In 1996, colony 4.2 contained many robust adult plants, but few seedlings and non-flowering adults, in an area of 32 m² (344 ft²) (TDEC 1996, Appendix I, p. XXII). In 2005, TDEC estimated a total of 52,997 plants at this site. This secure colony is located in the Elsie Quarterman Cedar Glade DSNA, on COE lands at J. Percy Priest Reservoir, and appears to be self-sustaining based on the increases observed over time. Colony 4.3 is located near the COE Hurricane Public Access Area. In 1996, this colony consisted of many robust adult plants and abundant juveniles in an area of about 68 m² (732 ft²) (TDEC 1996, Appendix I, p. XXIII). In 2005, TDEC (2006, p. 5) estimated a total of 3,300 plants at this colony. We believe this colony is self-sustaining; however, it is vulnerable to impacts from illegal ORV access as noted above. The total number of plants in the one secured and self-sustaining colony in the Allvan population contained an estimated 52,997 plants in 2005. The colony that we do not consider secure accounted for an estimated 3,300 total plants in 2005.

The Couchville population (number 5 in the recovery plan) consisted of a single known colony spanning

approximately eight privately owned tracts when the recovery plan was completed (Service 1989, p. 7). This population now consists of three natural and five introduced colonies, all located within an approximately 2.8 km² (1.1 mi²) area of Davidson and Rutherford Counties on lands owned by the State of Tennessee (except for colony 5.2, which is on private land). Drew and Clebsch (1995, p. 62) estimated a total of 89,300 plants at colony 5.1 in 1987, occupying an estimated area of 13,860 m² (149,189 ft²). TDEC (2006, p. 4) estimated a total of 63,026 plants at this site in 2005. Colony 5.2 is divided between two privately owned properties. The plants in this colony are found in habitats of varying quality, having been subjected to past disturbance in some places, and in 1993, vegetative plants were observed occupying an area of approximately 1,823 m² (19,623 ft²) (TDEC 1996, Appendix I, p. XXV). TDEC (2006, p. 4) estimated a total of 3,360 plants at this colony in 2005. Colonies 5.3 through 5.6 were established from seed and juveniles planted at Long Hunter State Park during 1989 through 1991. TDEC (1996, Appendix I, p. XXVI) observed 428 plants at colony 5.3 in 1996, and noted that they were spread out over a wide area; in 2005, TDEC (2006, p. 4) estimated a total of 13,774 plants at this colony. TDEC (1996, Appendix I, p. XXVII) observed that a thriving population containing thousands of individuals had become established at colony 5.4 by 1996, and that the plants north of the road dividing this colony occupied an area of 2,153 m² (23,175 ft²); in 2005, TDEC (2006, p. 5) estimated a total of 7,397 and 8,460 plants were on the north and south sides of the road, respectively. Colony 5.5 consisted of less than 200 total plants occupying an estimated area of 53 m² (570 ft²) in 1996 (TDEC 1996, Appendix I, pp. XXVIII–XXIX); in 2005, there were an estimated 11,143 plants (TDEC 2006, p. 4). Colony 5.6 consisted of approximately 2,000 plants occupying an area of 51 m² (549 ft²) in 1996 (TDEC 1996, Appendix I, pp. XXIX–XXX); in 2005, there were an estimated 7,251 plants (TDEC 2006, p. 5). Colony 5.7, for which no historic monitoring data are available, is the only naturally occurring colony at Long Hunter State Park. TDEC (2006, p. 4) estimated that a total of 146 plants were found here in 2005. Colony 5.8 was established in 2000 at the Fate Sanders Barrens DSNA, located on COE lands at J. Percy Priest Reservoir. This colony is located approximately 3.5 km (2.8 mi) southeast of colony 5.3 in the Couchville population. TDEC planted

199 plants into two areas at this site in 2000 (Lincicome 2008, pers. com.) and estimated a total of 866 plants at this colony in 2005 (TDEC 2006, p. 5). The data above demonstrate that the secure colonies (5.1, 5.4, 5.6, and 5.8) in the Couchville population are self-sustaining based on stable or increasing numbers over time. In addition, although the number of plants in colony 5.1 decreased between 1987 and 2005, we conclude that colony 5.1 is secured and self-sustaining for the foreseeable future due to the large number of individuals at this site persisting over a 20-year period. The total number of plants from the Couchville population in secured and self-sustaining colonies was estimated to be 87,000 total plants in 2005. Colonies that we do not consider secure accounted for an estimated 28,423 total plants in 2005.

The Stones River National Battlefield population (i.e., population 6, not included in the recovery plan) consists of three colonies established through introductions into an area that is now a DSNAs. Colony 6.1 was established from seeds introduced by Hemmerly in 1970 (1976, pp. 10, 81), as part of investigations into seedling survival under field conditions. This colony consists of two groupings of plants, one of which consisted of 3,880 plants and the other 28 plants in 1995; the colony occupied an area of 39 m² (420 ft²) in 1996 (TDEC 1996, Appendix I, p. XXXI). TDEC (2006, p. 4) estimated a total of 21,729 plants at this colony in 2005. Colonies 6.2 and 6.3 are thought to have been established by a neighbor of the battlefield in the mid-1990s (Hogan 2008, pers. com.) and consisted of 134 and 401 plants, respectively, in 1995 (TDEC 1996, Appendix I, p. XXXII). In 2005, TDEC (2006, p. 4) estimated that there were 2,031 plants at colony 6.2 and 7,303 plants at colony 6.3. The total number of plants estimated in the Stones River National Battlefield population in 2005 was 31,063 total plants, all in secured and self-sustaining colonies.

Numerous partners are involved in managing *Echinacea tennesseensis* populations on their lands. TDEC compared management options at the Vesta Cedar Glade DSNAs, including mowing, discing, burning, and application of selective herbicides for removal of grasses (Clebsch 1993, pp. 2–8). TDEC and TNC have used grazing of goats, mechanical removal, and herbicide applications to control woody species encroachment on the margins of cedar glade openings at Mount View Glade DSNAs (TDEC 2003, pp. 4–9). TDEC applies prescribed fire or mechanical removal, as needed and

within constraints imposed by locations within the urban interface, to control woody species, including the invasive exotic privet (*Ligustrum sp.*), at many DSNAs where *E. tennesseensis* occurs; these include Mount View Glade, Vesta Cedar Glade, Vine Cedar Glade, Cedars of Lebanon State Forest Natural Area, Gattinger's Cedar Glade and Barrens, Elsie Quarterman Cedar Glade, Fate Sanders Barrens, and Couchville Cedar Glade and Barrens. TDEC works with the Tennessee Division of Forestry (TDF) to ensure that colonies in the Cedars of Lebanon State Forest, which includes three DSNAs, receive necessary management and collaborates with TDF to implement all prescribed burns that are conducted on DSNAs. TDEC also has cooperated with COE on construction of fences or earthen berms around sites at J. Percy Priest Reservoir that have been threatened by urban encroachment and illegal ORV use. The NPS monitors the introduced population at the Stones River National Battlefield and controls woody plant encroachment and vegetation succession in the glade openings where the colonies occur, as necessary.

Because TDEC and other entities have monitored *Echinacea tennesseensis* populations many times since the time of listing and have managed colonies on protected lands to minimize threats from vegetation succession and ORV use, and will continue to do so in the foreseeable future, we consider this recovery action completed.

Recovery Action (6): Conduct Public Education Projects

Echinacea tennesseensis was featured in newspaper (Paine 2002, p. 6B) and magazine (Simpson and Somers 1990, pp. 14–16; Campbell 1992, p. 32; Daerr 1999, p. 50) articles to educate the general public about the species, the cedar glade ecosystem it occupies, and the conservation efforts directed towards them. The Service published “An Educator’s Guide to the Threatened and Endangered Species and Ecosystems of Tennessee,” which includes instructional materials about the cedar glades of middle Tennessee and two federally listed plant species found in the glades, *E. tennesseensis* and *Astragalus bibullatus* (Pyne’s ground-plum) (Service no date, pp. 50–53). TDEC personnel periodically lead guided wildflower walks in the cedar glades DSNAs and educate the public about *E. tennesseensis* and other Federal and State listed plant species during those walks. In 2000, TDEC published 10,000 copies of an educational poster featuring Tennessee’s rare plants, including *E. tennesseensis*. Because

numerous public education projects have been conducted, we consider this recovery action completed.

Summary of Factors Affecting the Species

Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing, reclassifying, or removing species from the Federal Lists of Endangered and Threatened Wildlife and Plants. “Species” is defined by the Act as including any species or subspecies of fish or wildlife or plants, and any distinct vertebrate population segment of fish or wildlife that interbreeds when mature (16 U.S.C. 1532(16)). Once the “species” is determined we then evaluate whether that species may be endangered or threatened because of one or more of the five factors described in section 4(a)(1) of the Act. For species that are already listed as endangered or threatened, the analysis of threats must include an evaluation of both the threats currently facing the species, and the threats that are reasonably likely to affect the species in the foreseeable future following the delisting or downlisting and the removal or reduction of the Act’s protections.

We must consider these same five factors in reclassifying or delisting a species. We may delist a species according to 50 CFR 424.11(d) if the best available scientific and commercial data indicate that the species is neither endangered nor threatened for the following reasons: (1) The species is extinct; (2) the species has recovered and is no longer endangered or threatened (as is the case for *Echinacea tennesseensis*); and/or (3) the original scientific data used at the time the species were classified were in error.

A species is “endangered” if it is in danger of extinction throughout all or a “significant portion of its range” and is “threatened” if it is likely to become endangered within the foreseeable future throughout all or a significant portion of its range. The word “range” is used here to refer to the range in which the species currently exists, and the word “significant” refers to the value of that portion of the range being considered to the conservation of the species.

The Act does not define the term “foreseeable future.” However, in a January 16, 2009, memorandum addressed to the Acting Director of the Service from the Office of the Solicitor, Department of the Interior, concluded, “ * * * as used in the [Act], Congress intended the term ‘foreseeable future’ to describe the extent to which the Secretary can reasonably rely on

predictions about the future in making determinations about the future conservation status of the species” (U.S. Department of the Interior 2009). “Foreseeable future” is determined by the Service on a case-by-case basis, taking into consideration a variety of species-specific factors such as lifespan, genetics, mating systems, demography, threat projection timeframes, and environmental variability.

In considering the foreseeable future as it relates to the status of *Echinacea tennesseensis*, we defined the “foreseeable future” to be the extent to which, given the amount and substance of available data, events, or effects can and should be anticipated, or the threats reasonably extrapolated. We considered the historical data to identify any relevant existing threats acting on the species, ongoing conservation efforts, data on species abundance and persistence at individual sites since the time of listing, identifiable informational gaps and uncertainties regarding residual and emerging threats to the species, as well as population status and trends, its life history, and then looked to see if reliable predictions about the status of the species in response to those factors could be drawn. We considered the historical data to identify any relevant existing trends that might allow for reliable prediction of the future (in the form of extrapolating the trends). We also considered whether we could reliably predict any future events (not yet acting on the species and, therefore, not yet manifested in a trend) that might affect the status of the species, recognizing that our ability to make reliable predictions into the future is limited by the variable quantity and quality of available data.

Following a rangewide threats analysis we evaluate whether *Echinacea tennesseensis* is threatened or endangered in any significant portion(s) of its range.

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

The final rule to list *Echinacea tennesseensis* as endangered (44 FR 32604; June 6, 1979) identified the following habitat threats: habitat loss due to residential and recreational development and succession of cedar glade communities in which the species occurred.

Losses of cedar glade habitat and colonies of *Echinacea tennesseensis* to residential development have posed a significant threat to *E. tennesseensis*. At the time of listing, one population of *E. tennesseensis* had been reduced in size

due to housing construction and another was destroyed during the construction of a trailer park. The three extant occurrences at that time were all located on private lands, one of which was imminently threatened by surrounding residential development. This Davidson County occurrence has since been protected as a DSNA. Approximately two-thirds of the Wilson County occurrence that was on public lands is now a DSNA, and one-third remains on private lands. The Rutherford County occurrence was located in a gravel parking lot of a commercial property and has been destroyed. Since the time of listing, protection of natural colonies on publicly owned conservation lands and establishment of additional colonies through introductions have effectively diminished the threat residential development once posed to the survival of *E. tennesseensis*.

The final listing rule for *Echinacea tennesseensis* described recreational development as a threat facing the Davidson County (*i.e.*, Mount View) population, but did not address the specific nature of the recreational development. The Mount View, Allvan, and Couchville populations occur in close proximity to J. Percy Priest Reservoir, construction of which was completed in 1967. It is possible that development of recreational facilities following completion of the reservoir presented a threat to *E. tennesseensis* or cedar glade habitats. However, four of the secure and self-sustaining colonies (*i.e.*, colonies 1.2, 1.4, 4.2, and 5.8) are located within the now-protected lands buffering the reservoir, three of which were designated as Environmentally Sensitive Areas in the J. Percy Priest 2007 Master Plan Update (Corps 2007, pp. 3–1 to 4–3). Therefore, recreational development no longer poses a threat to the survival of *E. tennesseensis*.

There are now 27 colonies, distributed among the six populations of *Echinacea tennesseensis*, which occur entirely or primarily on conservation lands in either State or Federal ownership. The lone exception to public ownership of these conservation lands is the Gattinger Glade DSNA, which is managed by TDEC but privately owned and protected under a conservation easement. We consider 19 of these colonies to be secure and self-sustaining. Sixteen colonies, all but two of which are secure, are located entirely or primarily within DSNAs that were designated at various times between 1974 and 2009. TDEC manages most of these DSNAs, in some cases cooperatively with TDF, for the purpose of conserving *E. tennesseensis* and the cedar glades and barrens ecosystem on

which it depends. All but one of these DSNAs lie within or adjacent to State or Federal conservation lands that provide complementary conservation benefits by maintaining functioning ecosystems within which these colonies occur and harboring additional protected colonies of *E. tennesseensis*.

Providing a large, protected cedar glade and forest ecosystem connected to the Vesta Cedar Glade, Vine Cedar Glade, and Cedars of Lebanon State Forest DSNAs, the non-DSNA lands in the Cedars of Lebanon State Forest also contain three colonies. An additional colony is located at the Cedars of Lebanon State Park, which is adjacent to the Cedars of Lebanon State Forest. Long Hunter State Park contains six colonies and provides a functioning ecosystem buffer to the Couchville Cedar Glade and Barrens DSNA. COE lands at J. Percy Priest Reservoir provide habitat for three colonies in addition to the colonies in the Elsie Quarterman Cedar Glade and Fate Sanders Barrens DSNAs that lie within these lands. The Gattinger Cedar Glade is the only DSNA on private land that contains a colony of *Echinacea tennesseensis*. While this property is not buffered by other public lands, it lies within a large tract of land owned by the Nashville Super Speedway, which has been a partner in the conservation of *E. tennesseensis*. The three colonies at Stones River National Battlefield are included among the 16 within DSNAs, and lie within a protected buffer provided by NPS lands.

Given the statutory nature of the DSNA designation and TDEC’s demonstrated commitment to protecting lands maintaining the quality of habitats in the DSNAs, we find that the colonies located in DSNAs or in acquired lands that will be added to Tennessee’s natural area system will receive adequate long-term protection and necessary management to control vegetation succession and disturbance from human activities. Although colonies 2.4 and 2.7 contain an estimated 9 and 51 individuals, respectively, are threatened by ORV use, and lack long-term protection and management, impacts to these two colonies will not have a significant effect on the status of the species, as they represent less than one percent of the Vesta population. Delisting *Echinacea tennesseensis* is not likely to weaken TDEC’s commitment to the conservation of these DSNAs, several of which harbor one or more federally listed plant species other than *E. tennesseensis*.

We have identified five colonies on public lands outside of DSNAs that we consider secure and that contribute to

the improved status of this plant (*i.e.*, colonies 1.2, 1.4, 3.9, 5.4, and 5.6). These colonies are described under Recovery Action (5) in the Recovery Plan Implementation section, above.

However, illegal ORV activity remains a threat to this species at three colonies on public lands (colonies 2.4, 2.7, and 4.3), which we have not counted among the 19 secure, self-sustaining colonies. TDEC has worked to reduce this threat in several DSNAs by constructing barbed wire fences and limestone barriers. The COE has also extended efforts in the form of constructing fences and/or earthen berms near three colonies on lands at J. Percy Priest Reservoir to reduce this threat. Damage from ORV activity was noted by TDEC (1996, Appendix I) at only one of the 9 colonies located exclusively on private lands that are not under recovery protection agreements, none of which were counted among the 19 secure, self-sustaining colonies in this rule. While illegal ORV use remains a potential threat in certain colonies of *Echinacea tennesseensis* (TDEC 1996, p. 21 and Appendix I), we do not have data to suggest that such activity is occurring at a magnitude to cause *E. tennesseensis* to meet the definition of either an endangered or a threatened species throughout its range.

The threat of habitat loss or modification in the form of ORV activity has been observed at a total of four colonies. Three of the colonies (colonies 2.4, 2.7, and 4.3) are located on public land, and the fourth colony is located on private land (TDEC 1996, Appendix I). Recovery protection agreements are lacking at nine colonies that exist solely on private lands, leaving them vulnerable to habitat disturbance. However, we believe that *Echinacea tennesseensis* is neither endangered nor threatened as a result of habitat loss or modification because there are 19 secure and self-sustaining colonies distributed among six geographically defined populations. TDEC coordinates management of these colonies to reduce threats to *E. tennesseensis* and its habitat in cooperation with other partners. Examples of these management activities were provided under Recovery Action (5) in the Recovery Plan Implementation section, above.

Summary of Factor A: Although ORV activity has the potential to negatively affect the habitat of four *Echinacea tennesseensis* colonies, we consider this to be a low-level threat and we do not have any information to indicate that this is currently, or likely to be, a significant threat that would cause *E. tennesseensis* to meet the definition of

either an endangered or a threatened species. We expect that the lands containing the 19 secure and self-sustaining colonies, which accounted for approximately 83 percent of the total individuals estimated to exist in 2005, will remain permanently protected and that they will be managed to maintain cedar glade habitat. We anticipate that these conditions will remain essentially the same in the foreseeable future due to the adequate regulatory mechanisms in place to protect suitable habitat for *E. tennesseensis* in the majority of its range (see discussion under Factor D—Inadequacy of Existing Regulatory Mechanisms, below). In conclusion, we find that the present or threatened destruction, modification, or curtailment of its habitat or range is no longer a threat to the species throughout its range, both now and in the foreseeable future.

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

The final rule to list *Echinacea tennesseensis* as endangered (44 FR 32604; June 6, 1979) identified collection for commercial and recreational purposes as a threat to the species. Limited digging, presumably for horticultural purposes, has been historically observed at five colonies of *E. tennesseensis*, three (colonies 5.3, 5.5, and 5.6) of which are located in high visibility areas within Long Hunter State Park (TDEC 1996, p. 21). We do not consider these three colonies, or a fourth (colony 3.5) located on private land, to be secure for the purposes of this proposed rule. However, we do consider the fifth colony, colony 4.2, to be secure because it became a DSNAs in 1998, and no evidence of digging at this site has been recorded since 1996.

Echinacea tennesseensis that originated from natural populations, but is now grown from seed or vegetative propagules produced in nurseries, is available for commerce from one nursery and for sale by multiple nurseries only within the State of Tennessee. Thus, a Service interstate permit under section 10(a)(1)(A) of the Act is not required. TDEC regulates commerce of plants listed as endangered by the State of Tennessee through issuance of State permits for this purpose, as authorized by the Tennessee Rare Plant Protection Act of 1985 (T.C.A. 11–26–201). There are also at least two cultivars of *E. tennesseensis*, which are of hybrid origin, now available for interstate commerce and easily found on the internet. As hybrids, the prohibitions on interstate commerce under section 9 of the Act do not apply

to these cultivars, so a Service interstate permit under section 10(a)(1)(A) of the Act is not required. The prohibitions in the Tennessee Rare Plant Protection Act also do not apply to cultivars.

Native Americans have long used genus *Echinacea* for medicinal purposes and it is commercially available as a popular homeopathic supplement. However, *E. tennesseensis* is not included in the primary species used in commercial medicinal applications and studied for their medicinal properties (Senchina *et al.* 2006, p. 1). We are not aware of collections of this species being taken for this purpose and do not believe this poses a threat to this species currently or into the foreseeable future.

Summary of Factor B: Echinacea tennesseensis and hybrids displaying the attractive traits of the species are readily available commercially. Collection or intentional killing of specimens has been observed in the past at only five colonies, one of which we counted as secure in our analysis for this proposed delisting rule because this colony became a DSNAs in 1998, and no evidence of digging at this site has been recorded since 1996.

In addition, *E. tennesseensis* is not among the primary species of *Echinacea* used for medicinal applications. In conclusion, we find that overutilization for commercial, recreational (*i.e.*, gardening), scientific, or educational purposes is no longer a threat to *E. tennesseensis* throughout its range, both now and for the foreseeable future.

Factor C. Disease or Predation

The June 6, 1979, listing rule for *Echinacea tennesseensis* (44 FR 32604) stated that light grazing occurred at colony 3.2 but acknowledged that the degree of threat, if any, posed by this grazing was uncertain. A robust population of *E. tennesseensis* remains at this site today, much of which TDEC acquired for addition to Tennessee's natural area system. Deer browse has been identified as a potential threat at the three colonies in Stones River National Battlefield (TDEC 1996, Appendix I, pp. XXXI–XXXIII) and at colony 5.5 (TDEC 2007, p. 5). However, we have no data to suggest that such browsing threatens these colonies, which have persisted since being established by introductions 10 or more years ago.

Summary of Factor C: Although grazing or deer browse do affect *Echinacea tennesseensis*, we have no data to suggest that either grazing or deer browse are a threat to any colonies of *E. tennesseensis* or that they will become a threat now or within the foreseeable future. In conclusion, we

find that neither disease nor predation is a threat to *E. tennesseensis* throughout its range, both now and for the foreseeable future.

Factor D. Inadequacy of Existing Regulatory Mechanisms

When *Echinacea tennesseensis* was listed, the State of Tennessee had no laws protecting rare plants. Therefore, the final rule to list *E. tennesseensis* as endangered (44 FR 32604; June 6, 1979) identified the lack of State protections as a threat to the species. *Echinacea tennesseensis* is now listed as endangered by the State of Tennessee and is protected under the Tennessee Rare Plant Protection Act of 1985 (T.C.A. 11–26–201), which forbids persons from knowingly uprooting, digging, taking, removing, damaging, destroying, possessing, or otherwise disturbing for any purpose, any endangered species from private or public lands without the written permission of the landowner. While this statute does not forbid the destruction of *E. tennesseensis* or its habitat, neither does the Act afford such protection to listed plants. Furthermore, those colonies located in DSNAs are afforded additional protection by the State of Tennessee's Natural Area Preservation Act of 1971 (T.C.A. 11–1701), which forbids removal of State endangered and threatened species from DSNAs but also protects these areas from vandalism.

While it is possible that the State of Tennessee could determine that *Echinacea tennesseensis* should be removed from their State endangered plant list if the species is removed from the Federal List of Endangered and Threatened Plants, we believe that the DSNAs protected status of the lands where the 19 secure, self-sustaining colonies currently exist will continue to provide adequate regulatory protection for those colonies in the foreseeable future, including protection from threats due to habitat destruction and modification.

Summary of Factor D: We do not have any information to indicate that the existing regulatory mechanisms in absence of the Act's protection would be inadequate to address the remaining, low-level threats to the species from habitat destruction or modification (see Factor A discussion above). Therefore, we find that lack of regulatory protection is no longer a threat to *E. tennesseensis*. In conclusion, we find that the currently existing regulatory mechanisms described above are adequate, and they will remain adequate to protect *E. tennesseensis* and its habitat in the majority of its range now and within the foreseeable future.

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

As discussed under the Factor A section above, the June 6, 1979, listing rule for *Echinacea tennesseensis* (44 FR 32604) identified vegetation succession as a threat to the species and the cedar glades it depends on for its survival. A status survey for the species, completed in 1996 (TDEC 1996, p. 22), did not address this threat in its analysis of factors affecting the survival of the species, but it did recommend controlling vegetation succession at some sites in the survey's appendix containing population and site status reports. TDEC has developed a program for managing vegetation succession and other threats to cedar glades on DSNAs inhabited by *E. tennesseensis* and two other federally listed species, and continues to work cooperatively with TDF, Tennessee State Parks, and COE to manage potential threats in habitats where colonies exist on properties belonging to these agencies. Further, we are not aware of any colonies of *E. tennesseensis* that have been lost to vegetation succession.

The TDEC (1996, p. 2) identified low levels of genetic variability in *Echinacea tennesseensis* as a threat but did not report any deleterious effects of diminished genetic variability, such as inbreeding depression, that would indicate this factor poses a threat to this species. Baskauf *et al.* (1994, p. 186) documented low levels of genetic variability in *E. tennesseensis*, but also observed that this species is not devoid of genetic variability and is evidently well adapted to its cedar glade habitat. They noted that given the relatively large sizes of many of the naturally occurring populations, random genetic drift should not erode genetic variability in *E. tennesseensis* very rapidly. They suggested that dramatic population fluctuations or extinction and colonization events could have occurred historically and eroded genetic variability (Baskauf *et al.* 1994, p. 186). However, it is possible that this species might never have possessed high levels of genetic variability (Walck *et al.* 2002, p. 62).

Reduction of genetic diversity could pose a threat to viability of the introduced colonies, as they could be subject to losses in genetic variability that result from establishing colonies from a subset of the total genetic structure found in the species (i.e., the founder effect) (Allendorf and Luikart 2007, p. 129). We have no information concerning the genetic structure of introduced colonies compared to

naturally occurring ones, but this could be a factor to investigate if introduced colonies are found to be less stable than natural colonies through future monitoring. At this time, however, we do not believe that low genetic variability threatens the continued existence of *E. tennesseensis* now or within the foreseeable future.

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) concluded that warming of the climate system is unequivocal (IPCC 2007a, p. 30). Numerous long-term changes have been observed including changes in arctic temperatures and ice; widespread changes in precipitation amounts, ocean salinity, and wind patterns; and occurrences of extreme weather including droughts, heavy precipitation, heat waves and the intensity of tropical cyclones (IPCC 2007b, p. 7). Based on scenarios that do not assume explicit climate policies to reduce greenhouse gas emissions, global average temperature is projected to rise by 2–11.5 °F by the end of this century (relative to the 1980–1999 time period) (Karl *et al.* 2009, p. 24). Species that are dependent on specialized habitat types, limited in distribution, or the extreme periphery of their range will be most susceptible to the impacts of climate change. Such species could currently be found at high elevations, at extreme northern/southern latitudes, dependent on delicate ecological interactions, or sensitive to nonnative competitors. While continued change is certain, the magnitude and rate of change is unknown in many cases.

As stated above, *Echinacea tennesseensis* is only found in limestone barrens and cedar glades habitats of the Central Basin, Interior Low Plateau Physiographic Province, in Davidson, Rutherford, and Wilson Counties in Tennessee. Within this ecosystem, *E. tennesseensis* inhabits both xeric (dry) communities, where there is no soil or soil depth less than 5 cm (2 in.), and subxeric (moderately dry) communities on soils deeper than 5 cm (2 in.).

Estimates of the effects of climate change using available climate models lack the geographic precision needed to predict the magnitude of effects at a scale small enough to discretely apply to the range of *Echinacea tennesseensis*. However, data on recent trends and predicted changes for the Southeast United States (Karl *et al.* 2009, pp. 111–116) provide some insight for evaluating the potential threat of climate change to *E. tennesseensis*. Since 1970, the average annual temperature of the region has increased by about 2 °F, with

the greatest increases occurring during winter months. The geographic extent of areas in the Southeast region affected by moderate to severe spring and summer drought has increased over the past three decades by 12 and 14 percent, respectively (Karl *et al.* 2009, p. 111). These trends are expected to increase.

Rates of warming are predicted to more than double in comparison to what the Southeast has experienced since 1975, with the greatest increases projected for summer months. Depending on the emissions scenario used for modeling change, average temperatures are expected to increase by 4.5 °F to 9 °F by the 2080s (Karl *et al.* 2009, pp. 111). While there is considerable variability in rainfall predictions throughout the region, increases in evaporation of moisture from soils and loss of water by plants in response to warmer temperatures are expected to contribute to increased frequency, duration, and intensity of droughts (Karl *et al.* 2009, p. 112).

Despite the observations of Drew and Clebsch (1995, p. 66) that seedlings had an approximately 50-percent probability of dying during the drought conditions that occurred during their first year of study, we believe there is biological and historical evidence to suggest that *Echinacea tennesseensis* is well-adapted to endure predicted effects of climate change. First, Drew and Clebsch (1995, p. 66) found that stage-specific mortality rates during the drought conditions of their first year of study for non-reproductive *E. tennesseensis* plants with a cumulative leaf length greater than 30 cm (12 in) (*i.e.*, non-seedling, vegetative plants) and plants that were reproductively active ranged from 17 to 31 percent, considerably lower than rates observed in seedlings. Second, Hemmerly (1976, p. 12) found that mature plants possessed several roots averaging 38.4 cm (15.1 in.) in length and extending an average depth of 23.1 cm (9.1 in.) into the soil, often branching horizontally after reaching an impenetrable rock layer. These observations suggest that while seedlings face higher risks of mortality in drought conditions, this species possesses biological characteristics that increase drought resistance in later life-history stages. That non-seedling life stages of *E. tennesseensis* are more resilient to drought than seedlings is supported by Drew and Clebsch's (1995, p. 67) observation of demographic patterns in flowering individuals. During 1988, 41 percent of the plants that had flowered during 1987 failed to do so, presumably influenced by drought. However, 68 percent of the plants that failed to flower during 1988

produced flowers during 1989, when annual rainfall levels increased. This ability to vary flower production in relation to annual rainfall levels, combined with its apparently long-lived habit (individual plants live up to at least 6 years, but the maximum lifespan is probably much longer (Baskauf 1993, p. 37)), should enable *E. tennesseensis* to remain viable through periods of drought.

Studies examining the influence of genetic, ecological, and physiological factors on the distribution of *Echinacea tennesseensis* have not found sufficient differences between this species and more widespread congeners (other species belonging to the genus *Echinacea*) to explain its endemism in the cedar glades of middle Tennessee based on these factors alone (Baskin *et al.* 1997, p. 385; Baskauf and Eickmeier 1994, p. 963; Snyder *et al.* 1994, p. 64). Rather, it has been suggested that historical and ecological factors contributed to the evolution of this species and its subsequent restriction to cedar glade habitats in middle Tennessee (Baskin *et al.* 1997, p. 385). Baskin *et al.* (1997, pp. 390–391) suggested that an ancestral form of *E. tennesseensis* migrated to and became established in middle Tennessee during the Hypsithermal Interval (*i.e.*, the period of greatest post-glacial warming, ca. 8,000 to 5,000 years before present), and that as temperatures became cooler, the only members of this ancestral taxon that survived were those growing in the cedar glades of the region—*i.e.*, the plants that eventually gave rise to *E. tennesseensis*.

While predictions of increased drought frequency, intensity, and duration suggest that seedling survival could be a limiting factor for *Echinacea tennesseensis*, the species possesses other biological traits (*i.e.*, long life span, interannual reproductive variability) to provide resilience to this threat. Further, predicted climate changes for the Southeast United States could, similar to what is believed to have taken place during the Hypsithermal Interval (Delcourt *et al.* 1986, p. 135), lead to an expansion of openings within forested areas of middle Tennessee, potentially increasing the area occupied by cedar glade communities. This presumably would increase the amount of suitable habitat available for *E. tennesseensis*. Based on these factors and the fact that we have no evidence that climate changes observed to date have had any adverse impact on *E. tennesseensis* or its habitat, we do not believe that climate change is a threat to *E.*

tennesseensis now or within the foreseeable future.

Summary of Factor E: Because (1) Management activities take place to prevent the loss of 19 secure *Echinacea tennesseensis* colonies; (2) 31 colonies are considered self-sustaining, as measured by persistence and demographic stability over time (despite low levels of genetic variation within the species), and 19 of these 31 colonies are considered secure; (3) there is biological and historical evidence to suggest that *E. tennesseensis* is well-adapted to endure predicted effects of climate change; and (4) we have no evidence that climate changes observed to date have had any adverse impact on *E. tennesseensis* or its habitat, we find that the other natural or manmade factors considered here are no longer a threat to *E. tennesseensis* and are not likely to become so in the foreseeable future.

Conclusion of the 5-Factor Analysis

We have carefully assessed the best scientific and commercial data available and have determined that *Echinacea tennesseensis* is no longer endangered or threatened throughout all of its range. We must next determine if the threats to *E. tennesseensis* are non-uniformly distributed such that populations in one portion of its range experience higher level of threats than populations in other portions of its range. When considering the listing status of the species, the first step in the analysis is to determine whether the species is in danger of extinction or likely to become endangered throughout all of its range. For instance, if the threats on a species are acting only on a portion of its range, but the effects of the threats are such that they place the entire species in danger of extinction or likely to become endangered, we would list the entire species.

Significant Portion of the Range

Data indicate that numbers of *Echinacea tennesseensis* and protections for its habitat have significantly increased since it was listed under the Act. As identified above, only ORV use, illegal or otherwise, potentially poses a known threat to *E. tennesseensis*. While disturbance from ORV use has been observed in the past and remains unaddressed at 4 colonies on publicly and privately owned lands harboring *E. tennesseensis* (*i.e.*, colonies 2.4, 2.7, 4.3 and 1 privately owned colony), these 4 colonies accounted for only 2 percent of the species' total distribution in 2005. Most of the largest colonies are located in DSNAs and are protected from this

threat by fences or other barriers that TDEC has constructed and maintained. At the time the 1989 recovery plan was written, there were five extant populations ranging in size from approximately 3,700 to 89,000 plants and consisting of one to three colonies each (Clebsch 1988, p. 14; Service 1989, p. 2). There were an estimated total of 146,000 individual plants in 1989 (Drew and Clebsch 1995, p. 62). Recovery efforts have secured habitat for 19 colonies that are self-sustaining and distributed among six geographically defined populations. These 19 secured, self-sustaining colonies accounted for an estimated 761,055 individual plants in 2005, or approximately 83 percent of the total species' distribution; colonies that we do not consider secure accounted for 159,224 individual plants, or approximately 17 percent of the total species' distribution. Therefore, while there is potential for ORV use to impact certain colonies, should that threat materialize, it is not a significant impact to the species as a whole. The number of secured plants and colonies is adequate to ensure that Factor A is no longer a threat to the species overall. Thus, destruction and modification of habitat from ORV use is not a threat to the species throughout all or a significant portion of its range now or into the foreseeable future.

In conclusion, major threats to *Echinacea tennesseensis* have been reduced, managed, or eliminated. Although the potential threats to *E. tennesseensis* habitat are fairly uniform throughout the range of the species, they are more pronounced on privately owned lands where the species occurs. However, we do not consider threats to these unsecured colonies to affect a significant portion of the range of this species. Therefore, we have determined that none of the existing or potential threats, either alone or in combination with others, warrant listing *E. tennesseensis* as endangered in any significant portion of its range or that these threats are likely to cause *E. tennesseensis* to become endangered within the foreseeable future in any significant portion of its range.

On the basis of this evaluation, we believe *E. tennesseensis* no longer requires the protection of the Act, and we propose to remove *E. tennesseensis* throughout its range from the Federal List of Endangered and Threatened Plants (50 CFR 17.12(h)).

Effects of This Proposed Rule

This rule revises 50 CFR 17.12(h) to remove *Echinacea tennesseensis* from the Federal List of Endangered and Threatened Plants. This rule would not

affect 50 CFR 17.95 because critical habitat was never designated for this species.

The Act and its implementing regulations set forth a series of general prohibitions and exceptions that apply to all endangered plants. The prohibitions under section 9(a)(2) of the Act make it illegal for any person subject to the jurisdiction of the United States to import or export, transport in interstate or foreign commerce in the course of a commercial activity, sell or offer for sale in interstate or foreign commerce, remove and reduce *Echinacea tennesseensis* to possession from areas under Federal jurisdiction, or remove, cut, dig up, or damage or destroy *E. tennesseensis* on any other area in knowing violation of any State law or regulation such as a trespass law. Section 7 of the Act requires that Federal agencies consult with us to ensure that any action authorized, funded, or carried out by them is not likely to jeopardize the species' continued existence. If this proposed rule is finalized, it would revise 50 CFR 17.12 to remove (delist) *E. tennesseensis* from the Federal List of Endangered and Threatened Plants, and these prohibitions would no longer apply. Delisting *E. tennesseensis* is expected to have positive effects in terms of increasing management flexibility by State and Federal governments.

Post-Delisting Monitoring

Section 4(g)(1) of the Act requires the Secretary of the Interior, through the Service, to implement a system, in cooperation with the States, to monitor for not less than 5 years the status of all species that are delisted due to recovery. Post-delisting monitoring refers to activities undertaken to verify that a species delisted due to recovery remains secure from the risk of extinction after the protections of the Act no longer apply. The primary goal of post-delisting monitoring is to monitor the species to ensure that its status does not deteriorate, and if a decline is detected, to take measures to halt the decline so that proposing to list it as endangered or threatened is not again needed. If at any time during the monitoring period, data indicate that protective status under the Act should be reinstated, we can initiate listing procedures, including, if appropriate, emergency listing. At the conclusion of the monitoring period, we will review all available information to determine if relisting, the continuation of monitoring, or the termination of monitoring is appropriate.

Section 4(g) of the Act explicitly requires cooperation with the States in development and implementation of

post-delisting monitoring programs, but we remain responsible for compliance with section 4(g) and, therefore, must remain actively engaged in all phases of post-delisting monitoring. We also seek active participation of other entities that are expected to assume responsibilities for the species' conservation after delisting. In August 2008, TDEC agreed to be a cooperater in the post-delisting monitoring of *Echinacea tennesseensis*.

We have prepared our Draft Post-Delisting Monitoring Plan for Tennessee Purple Coneflower (*Echinacea tennesseensis*) (Plan) (Service 2009). The draft plan:

- (1) Summarizes the species' status at the time of delisting;
- (2) Defines thresholds or triggers for potential monitoring outcomes and conclusions;
- (3) Lays out frequency and duration of monitoring;
- (4) Articulates monitoring methods, including sampling considerations;
- (5) Outlines data compilation and reporting procedures and responsibilities; and
- (6) Proposes a post-delisting monitoring implementation schedule, including timing and responsible parties.

Colonies of *Echinacea tennesseensis* selected for post-delisting monitoring are indicated with an asterisk in Table 1 of this proposed rule and in the draft plan.

Concurrent with this proposed delisting rule, we announce the draft plan's availability for public review. The draft post-delisting monitoring plan can be viewed in its entirety at: <http://www.fws.gov/cookeville/>. Copies can also be obtained from the U.S. Fish and Wildlife Service, Cookeville Field Office, Tennessee (see **FOR FURTHER INFORMATION CONTACT** section). We seek information, data, and comments from the public regarding *Echinacea tennesseensis* and the post-delisting monitoring strategy. We are also seeking peer review of this draft plan concurrently with the proposed rule comment period. We anticipate finalizing this plan, considering all public and peer review comments, prior to making a final determination on the proposed delisting rule.

Peer Review

In accordance with our policy published in the **Federal Register** on July 1, 1994 (59 FR 34270), and the OMB's Final Information Quality Bulletin for Peer Review, dated December 16, 2004, we will solicit the expert opinions of at least three appropriate and independent specialists regarding the science in this proposed

rule and the draft post-delisting monitoring plan. The purpose of such review is to ensure that we base our decisions on scientifically sound data, assumptions, and analyses. We will send peer reviewers copies of this proposed rule and the draft post-delisting monitoring plan immediately following publication in the **Federal Register**. We will invite peer reviewers to comment, during the public comment period, on the specific assumptions and conclusions in this proposed delisting and draft post-delisting monitoring plan. We will summarize the opinions of these reviewers in the final decision documents, and we will consider their input and any additional information we receive as part of our process of making a final decision on this proposal and the draft post-delisting monitoring plan. Such communication may lead to a final decision that differs from this proposal.

Required Determinations

Clarity of the Rule

We are required by Executive Orders 12866 and 12988 and by the Presidential Memorandum of June 1, 1998, to write all rules in plain language. This means that each rule we publish must:

- (1) Be logically organized;
- (2) Use the active voice to address readers directly;
- (3) Use clear language rather than jargon;
- (4) Be divided into short sections and sentences; and
- (5) Use lists and tables wherever possible.

If you feel that we have not met these requirements, send us comments by one of the methods listed in the **ADDRESSES** section. To better help us revise the rule, your comments should be as specific as possible. For example, you should tell us the numbers of the sections or paragraphs that are unclearly written, which sections or sentences are too long, the sections where you feel lists or tables would be useful, etc.

Paperwork Reduction Act of 1995

OMB regulations at 5 CFR 1320, which implement provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), require that Federal agencies obtain approval from OMB before collecting information from the public. The OMB regulations at 5 CFR 1320.3(c) define a collection of information as the obtaining of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, 10

or more persons. Furthermore, 5 CFR 1320.3(c)(4) specifies that “ten or more persons” refers to the persons to whom a collection of information is addressed by the agency within any 12-month period. For purposes of this definition, employees of the Federal government are not included. The draft post-delisting monitoring plan does not contain any new collections of information that require approval by OMB under the Paperwork Reduction Act. It will not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act

We have determined that we do not need to prepare an environmental assessment or environmental impact statement, as defined in the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*), in connection with regulations adopted under section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship With Tribes

In accordance with the President’s memorandum of April 29, 1994, “Government-to-Government Relations with Native American Tribal Governments” (59 FR 22951), Executive Order 13175, and the Department of Interior’s manual at 512 DM 2, we readily acknowledge our responsibility to communicate meaningfully with recognized Federal Tribes on a government-to-government basis. We have determined that there are no tribal lands affected by this proposal.

References Cited

A complete list of references cited is available upon request from the Cookeville Field Office (see **FOR FURTHER INFORMATION CONTACT** section).

Author

The primary author of this document is Geoff Call, Cookeville Field Office (see **FOR FURTHER INFORMATION CONTACT** section).

List of Subjects in 50 CFR Part 17

Endangered and threatened species, Exports, Imports, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we hereby propose to amend part 17, subchapter B of chapter I, title 50 of the Code of Federal Regulations, as set forth below:

PART 17—[AMENDED]

1. The authority citation for part 17 continues to read as follows:

Authority: 16 U.S.C. 1361–1407; 16 U.S.C. 1531–1544; 16 U.S.C. 4201–4245; Pub. L. 99–625, 100 Stat. 3500; unless otherwise noted.

§ 17.12 [Amended]

2. Amend § 17.12 (h) by removing the entry for “*Echinacea tennesseensis*” under “FLOWERING PLANTS” from the List of Endangered and Threatened Plants.

Dated: July 29, 2010.

Wendi Weber,

Acting Deputy Director, Fish and Wildlife Service.

[FR Doc. 2010–19742 Filed 8–11–10; 8:45 am]

BILLING CODE 4310–55–P

DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[FWS–R9–IA–2008–0121; [96100–1671–0000–B6]

Endangered and Threatened Wildlife and Plants; 90-Day Finding on a Petition to Delist the Tiger (*Panthera tigris*)

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Notice of 90-day petition finding.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), announce a 90-day finding on a petition to remove the tiger (*Panthera tigris*) from the List of Endangered and Threatened Wildlife under the Endangered Species Act of 1973, as amended. We find that the petition does not present substantial scientific or commercial information indicating that removing the species from the List of Endangered and Threatened Wildlife may be warranted. Therefore, we will not initiate a status review in response to this petition. We ask the public to submit to us any new information that becomes available concerning the status of the tiger or threats to it or its habitat at any time. This information will help us monitor and encourage the conservation of this species.

DATES: The finding announced in this document was made on August 12,