DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS-R4-ES-2019-0070; FXES11130900000C2-189-FF09E42000]

RIN 1018–BD01

Endangered and Threatened Wildlife and Plants; Reclassification of *Eugenia woodburyana* from Endangered to Threatened with a Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are reclassifying (downlisting) the plant *Eugenia woodburyana* (no common name) from an endangered species to a threatened species under the Endangered Species Act of 1973, as amended (Act), due to improvements in the species' status since its original listing in 1994. This action is based on a thorough review of the best available scientific and commercial information, which indicates that *E. woodburyana* is not currently in danger of extinction throughout all or a significant portion of its range, but it is likely to become so within the foreseeable future. We are also finalizing a rule issued under section 4(d) of the Act to provide measures that are necessary and advisable for the conservation of *E. woodburyana.*

DATES: This rule is effective [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: The supporting documents we used in preparing this rule and public comments we received on the proposed rule are available on the internet at *https://www.regulations.gov* in Docket No. FWS-R4-ES-2019-0070.

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00622; email caribbean_es@fws.gov; telephone 787–405–3641. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, if a species is determined to no longer be an endangered or threatened species, we may reclassify the species or remove it from the Federal Lists of Endangered and Threatened Wildlife and Plants due to recovery. A species is an "endangered species" for purposes of the Act if it is in danger of extinction throughout all or a significant portion of its range and is a "threatened species" if it is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. We are reclassifying *Eugenia woodburyana* from endangered to threatened (i.e., "downlisting" the species) because we have determined that the species is no longer in danger of extinction throughout all or a significant portion of its range. Downlisting a species can only be completed by issuing a rule.

What this document does. This rule reclassifies *E. woodburyana* from endangered to threatened (i.e., "downlists" the species), with a rule issued under section 4(d) of the Act, based on the species' current status, which has been improved through implementation of conservation actions.

The basis for our action. Under the Act, we may determine that a species is an endangered or threatened species based on any one or a combination of five factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or

manmade factors affecting its continued existence. In our May 2017, 5-year status review, we made a recommendation to reclassify this plant from endangered to threatened based on our evaluation of these same five factors. Based on the status review, the current threats analysis, and evaluation of conservation measures, we conclude that the plant *E. woodburyana* no longer meets the Act's definition of an endangered species, and we are reclassifying it as a threatened species because it is no longer in danger of extinction throughout all or a significant portion of its range but is likely to become so within the foreseeable future.

New information indicates that *E. woodburyana* is now more abundant and more widely distributed than when it was listed in 1994, when only approximately 45 individuals were known from 3 localities in southwestern Puerto Rico. In the recovery plan for *E. woodburyana* (Service 1998), the species was identified as occurring in 4 locations in southwest Puerto Rico, totaling approximately 150 individuals. Currently, self-sustaining *E. woodburyana* natural populations are known to occur in 6 localities along southern Puerto Rico, extending from the municipality of Cabo Rojo in the southwest eastward to the municipality of Salinas in the south, totaling approximately 2,751 individuals, not including seedlings. About 47 percent of the currently known individuals occur under protective status in areas managed for conservation and where threats due to habitat modification have been reduced. Recovery actions (e.g., propagation and planting, habitat enhancement with native tree species, cattle exclusion, firebreaks) to control and reduce remaining threats have been successfully implemented in collaboration with several partners.

Our review of the best available scientific and commercial information indicates that some threats to *E. woodburyana* still remain while others have been reduced. Remaining threats that will make this species likely to become endangered in the foreseeable future include habitat loss, degradation, and fragmentation, and other natural or manmade factors such as human-induced fires and landslides.

We are promulgating a section 4(d) rule. We are specifically tailoring the incidental take exceptions under section 9(a)(1) of the Act to the species to provide protective mechanisms to State and Federal partners so that they may continue with certain activities that are not anticipated to cause direct injury or mortality to *E. woodburyana* and that will facilitate the conservation and recovery of the species.

Peer review and public comment. In accordance with our joint policy on peer review published in the *Federal Register* on July 1, 1994 (59 FR 34270), and our August 22, 2016, memorandum updating and clarifying the role of peer review of listing actions under the Act, we solicited expert opinion on our October 21, 2020, proposed rule to downlist *E. woodburyana* (85 FR 66906). The Service sent the proposed rule to five independent peer reviewers and received three responses. The purpose of peer review is to ensure that our determination is based on scientifically sound data, assumptions, and analyses. The peer reviewers have expertise that includes familiarity with the species and its habitat, biological needs, and threats.

Previous Federal Actions

This species was originally listed as endangered under the Endangered Species Act on September 9, 1994 (59 FR 46715). On October 21, 2020, we proposed to downlist *E. woodburyana* from endangered to threatened (85 FR 66906). Please refer to that proposed rule for a detailed description of previous Federal actions concerning this species. The proposed rule and supplemental documents are provided at *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0070.

Summary of Changes from the Proposed Rule

In preparing this final rule, we reviewed and fully considered all comments we received during the comment period from the peer reviewers and the public on the proposed rule to downlist *E. woodburyana.* We made minor changes and corrections throughout this document in response to comments. However, the information we received during the public comment period

on the proposed rule did not change our determination that *E. woodburyana* should be reclassified from endangered to threatened under the Act.

Summary of Comments and Recommendations

In the proposed rule published on October 21, 2020 (85 FR 66906), we requested that all interested parties submit written comments on the proposal by December 21, 2020. We also contacted the Puerto Rico Department of Natural and Environmental Resources (PRDNER), scientific experts and organizations, and other interested parties and invited them to comment on the proposal. A newspaper notice inviting public to provide comments was published in Primera Hora on October 22, 2020.

On April 26, 2021, we reopened the comment period on the October 21, 2020, proposed rule for an additional 30 days and announced a public hearing on the proposed rule (86 FR 22005). A newspaper notice inviting public to provide comments at the public hearing was published in Primera Hora and El Nuevo Día on April 28, 2021, and at The Virgin Islands Daily News on April 27, 2021. We conducted the public hearing on May 12, 2021. No comments were received during or following the public hearing.

During the open comment periods, we received very few public comments, both in support of and opposed to our proposed downlisting of *Eugenia woodburyana*, but most did not include substantive information. 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 Act directs that determinations as to whether any species is an endangered or a threatened species must be made "solely on the basis of the best scientific and commercial data available." All substantive information we received from the peer reviewers and from the public during the proposed rule's comment periods has either been incorporated directly into this final determination or is addressed below.

Peer Reviewer Comments

We reviewed all comments we received from peer reviewers for substantive issues and new information regarding *E. woodburyana*. The reviewers provided editorial and technical comments that were generally supportive of our approach; the peer reviewers made suggestions and comments that strengthened our analysis and improved the final rule.

(1) Comment: One peer reviewer stated that the Service cannot claim an increase in the number of *E. woodburyana* populations, as the historic population at Peñones de Melones was extirpated.

Response: We consider the geographical area of Peñones de Melones as a range extension of Sierra Bermeja, and, therefore, we do not consider the loss of the Peñones de Melones individuals as the extirpation of a genetically unique population critical for the recovery of the species. Moreover, the number of individuals recorded at Sierra Bermeja has steadily increased since the time of listing, evidence exists of reproductive events (flowers and fruit production) on a yearly basis, and the population structure shows multiple age classes, which indicates the population is improving.

(2) Comment: A peer reviewer stated that the population size of *E. woodburyana* is not sufficiently robust to reclassify the species to a threatened status. The reviewer highlights that a good population of any species must have at least 2,500 adult individuals to be considered a healthy population and that this is not the case for *E. woodburyana*. The peer reviewer asserts that existing *E. woodburyana* populations will continue decreasing due to ongoing threats.

Response: We have no information (either in our files or provided by commenters or reviewers) to indicate that 2,500 individuals is the minimum required to be a healthy population for this species, although we note that we presently have 2,751 individuals. As previously stated, the presence of different size classes in three (i.e., Sierra Bermeja, Almácigo Bajo, and Cañon Murciélagos (GCF)) out of the six known *E. woodburyana* populations is an indicator of their improving status, and resilience to past and ongoing threats, but is not sufficient to demonstrate

that the species has fully recovered as we have no evidence of the species naturally colonizing suitable habitat in the proximity of known populations.

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range (i.e., if it meets the Act's definitions of an "endangered species" or a "threatened species"). We make determinations of whether any species is an endangered species or a threatened species because of any of the five listing factors in section 4(a)(1) of the Act and based solely on the best scientific and commercial data available. As discussed below under **Determination of *Eugenia woodburyana*'s Status**, we have determined that *E. woodburyana* no longer meets the definition of an endangered species under the Act, but the species does meet the definition of a threatened species.

Public Comments

(3) Comment: One commenter questioned the implementation of several delisting criteria, including: (a) "reduction and management of threats," (b) "existing natural populations demonstrate a stable or increasing trend," and (c) "establishment of three new populations of the species." The commenter explained that the issues affecting *E. woodburyana* recruitment will only worsen in the coming years as a result of climate change, the species' heavy reliance on rainfall for fruiting, and the potential for increased fire prevalence due to decreasing precipitation. Further, the commenter stated that the existence of multiple age classes of *E. woodburyana* at Finca Maria Luisa is not sufficient to indicate that the population is stable or increasing, as conservation recommendations have not been enforced and there is limited data on the sustainability or stability of the population. Finally, the commenter noted that survival following the first years after planting does not accurately reflect the long-term survival (viability) of the plant material. The commenter highlighted that the initial assessment of the planting efforts at La Tinaja in 2016 was promising, with an 87 percent survival rate, but

decreased to 70 percent when it was reassessed in 2017, and then further to 45 percent when it was assessed in 2019.

Response: We acknowledge that recovery criteria for *E. woodburyana* have only been partially met, and the species will continue to have the protections of the Act as a threatened species. Additionally, recovery is a dynamic process that may or may not follow the criteria in a recovery plan due to a variety of factors (see **Recovery**, below). As stated above, we make our status determinations based on the best available scientific and commercial data at the time the determination is made. Our analysis of the best commercial and scientific information available indicates that *E. woodburyana* does not meet the Act's definition of an endangered species.

At present, we know of approximately 2,751 plants, which is an increase from the 45 individuals known at the time of listing. In addition, about 47 percent of the currently known *E. woodburyana* individuals occur within lands managed for conservation where habitat management practices are being implemented (e.g., reforestation, cattle exclusion, and firebreaks). Although we acknowledge climate change scenarios will result in drier conditions within the subtropical dry forest life zone, its direct impacts on this species in the long term is uncertain because our ability to predict stressors associated with climate change is reduced beyond mid-century. At present, we have evidence of different size classes in three out of the six known populations (i.e., Sierra Bermeja, Almácigo Bajo, and GCF), suggesting stability and persistence despite past on ongoing threats. In addition, we have not identified a decline in the number of known individuals in these three populations; in fact, the number of known plants has increased since the time of listing and evidence exists of ongoing reproductive events (flower and fruit production), indicating that these populations are in good health and stable.

In addition, available literature indicates that survival for existing plant reintroduction efforts is approximately 52 percent, and at least some sites are showing evidence of flower and fruit production, which are important characteristics of success for reintroduction efforts (Godefroid et al. 2011, p. 672). Planting and monitoring of individuals will continue to secure

the long-term viability of ongoing efforts, and we will continue to work with our partners to secure the long-term viability and conservation of the species.

I. Reclassification Determination

Background

A thorough review of the taxonomy, life history, ecology, and overall viability of *E. woodburyana* was presented in the 5-year review (USFWS 2017, entire). Below, we present a summary of the biological and distributional information discussed in the 5-year review and new information published or obtained since.

Taxonomy and Species Description

Eugenia woodburyana is a small evergreen tree that belongs to the family Myrtaceae (Judd et al. 2002, p. 398). *Eugenia* is the largest genus of this family, which is very diverse in the Antilles and includes more native trees than any other genus of flowering plants in the flora of Puerto Rico (Breckon and Kolterman 1994, p. 5). *E. woodburyana* was first collected by Roy O. Woodbury in October 31, 1977, in the municipality of Guánica, Puerto Rico, and later described as a new species (Liogier 1994, p. 407). The species remains a valid species, and a recent molecular phylogenetic reconstruction to assess the evolutionary relationships of the Myrtaceae in the Caribbean confirmed its systematic placement within the genus *Eugenia* (Flickinger et al. 2020, p. 448).

Eugenia woodburyana may reach up to 6 meters (m) (19.8 feet (ft)) (Liogier 1994, p. 407). Its leaves are chartaceous (thin and stiff), pubescent on both sides, obovate or elliptic, rounded at the apex, and dark green and shiny above, and paler beneath. The fruit is an eight-winged, globose berry with a diameter of 2 centimeters (cm) (0.8 inches (in)) that turns red when mature (Liogier 1994, p. 407).

Reproductive Biology

The reproductive biology of *E. woodburyana* had not been thoroughly studied at the time it was listed. According to data in the recovery plan, herbarium specimens collected in October

and May at the GCF contained buds and flowers, whereas specimens collected in February and April were sterile. However, a specimen collected in March in Sierra Bermeja (southwest Puerto Rico) had remnants of flowers (USFWS 1998, pp. 3–4).

Some information on the phenology and germination of *E. woodburyana* has been gathered since the species was listed. This plant has been observed flowering in February, May, June, August, and October, and not all individuals flower at the same time and not all produce fruits (USFWS 2017, p. 17). Therefore, we suspect it could flower February through October, depending on rain levels. Flower bud development has been observed 3 to 5 days after rain events of greater than 1 inch (25.4 millimeters (mm)) in 1 day, and fruits are observed about 3 weeks later (USFWS 2017, p. 17). In the event water availability becomes a limiting factor, the immature fruits may become dormant for months until conditions are favorable for developing (Monsegur-Rivera 2012–2017, pers. obs.). Flowers of *E. woodburyana* are typically visited by honeybees (*Apis mellifera*), and pollination and fruit production appear to be the result of cross-pollination, as few fruits are produced when single individuals flower (Monsegur-Rivera 2012–2017, per. obs.).

Eugenia woodburyana seeds can remain dormant for a considerable period of time, and likely vary in time of emergence (Santiago 2011, p. 14). Recent germination trials indicate the species has a high germination rate (i.e., 70 percent), and that germination success is greater if seeds are planted within 2 weeks following harvesting. Seeds start germinating by developing a long taproot, an adaptation to secure access to water, and in the case of a sudden drought, the seed may stop development of new growths and go dormant (Monsegur-Rivera 2012–2014, pers. obs.). *E. woodburyana* is relatively easy to propagate. Over the past 10 years, the Service has worked with local partners to propagate and plant this species on lands managed for conservation in the Sierra Bermeja area (USFWS 2017, p. 11).

Distribution and Abundance

Eugenia woodburyana was originally known from dry thickets within the GCF (Liogier 1980, p. 185; Breckon and Kolterman 1994, p. 5). In 1981, this species was collected within the Cabo Rojo National Wildlife Refuge (CRNWR), and in 1984, at the dry serpentine slopes of Cerro Mariquita in Sierra Bermeja (Santiago-Blay et al. 2003, p. 1). At the time of listing, *E. woodburyana* was considered an endemic species of southwest Puerto Rico, known from only 45 individuals within the GCF, Sierra Bermeja, and an individual reported from the CRNWR. In addition, *E. woodburyana* was collected in 1996, at Peñones de Melones in Cabo Rojo (Breckon 4863; MAPR herbaria). Thirteen individuals of this species were recorded during a study at La Tinaja Tract (Laguna Cartagena National Wildlife Refuge (LCNWR)), which found the species was present in open forest on east-facing slopes, and that it did not occur in areas in transition from pasture to forest (Weaver and Chinea 2003, p. 279).

Following the finalization of the species' recovery plan in 1998, new populations within the geographical areas of Montes de Barinas, between the municipalities of Yauco and Guayanilla, and Punta Cucharas, and between the municipalities of Ponce and Peñuelas, were identified by local experts and the Service (Román-Guzmán 2006, p. 25). These reports expanded the species' distribution farther east within the subtropical dry limestone forest of Puerto Rico. The known range of the species continued to expand: In 2008, it was located at Almácigo Bajo Ward in the municipality of Yauco (USFWS 2017, p. 9). The species is also now known to extend to the Municipality of Salinas, as evidenced by a specimen collected within the boundaries of the Puerto Rico National Guard's Camp Santiago (Acevedo- Rodríguez 2014, p. 15; see table below). This locality is at least 18.6 miles (30 kilometers (km)) east of the previously nearest known site at Punta Cucharas in the municipality of Ponce. Below, we discuss each of these areas in more detail.

Table of currently known natural populations and number of individuals (adults and saplings) of *Eugenia woodburyana* in Puerto Rico.

Population name based on geographical range	Subpopulation (locality) name	Number of known adults/saplings per subpopulation[1] and percent of the total known population[2]	Land conservation status	Ownership
Sierra Bermeja	La Tinaja Tract (within LCNWR)	808/271 (39.2%)	Protected	U.S. Fish and Wildlife Service
Sierra Bermeja	Finca María Luisa (also known as Finca Escabi)	692/90 (28.4%)	Not protected	Private land under conservation easement with Para La Naturaleza. Threats not managed.
Sierra Bermeja	El Conuco (also known as Finca Sollins)	88/8 (3.5%)	Protected	Puerto Rico Conservation Trust (Para La Naturaleza)
Sierra Bermeja	Finca Lozada	300 estimated adults (10.9%)	Not protected	Private
Almácigo Bajo, Yauco	Almácigo Bajo (Río Loco)	120/226 (12.6%)	Not protected	Private
Guánica Commonwealth Forest	Cañon Hoya Honda	10 estimated adults (0.36%)	Protected	PRDNER
Guánica Commonwealth Forest	Cañon Las Eugenias	31/8 (1.4%)	Protected	PRDNER
Guánica Commonwealth Forest	Cañon Murciélagos	27/39 (2.4%)	Protected	PRDNER
Guánica Commonwealth Forest	Cañon Las Trichilias	1 adult (0.04%)	Protected	PRDNER
Montes de Barinas	Finca Catalá	1 adult (0.04%)	Not protected	Private
Punta Cucharas (Ponce-Peñuelas)	Peñon de Ponce	20 adults (0.7%)	Not protected	Private
Punta Cucharas (Ponce-Peñuelas)	Puerto Galexda	9 adults (0.3%)	Not protected	Private
Punta Cucharas (Ponce-Peñuelas)	Gasoducto Sur right-of-way	1 adult (0.04%)	Not protected	Private

Salinas	Camp Santiago	1 adult (0.04%)	Not protected	Puerto Rico National Guard. Threats not managed.

[1] Seedlings not included as part of the population numbers because available data do not allow us to determine the percentage of seedlings that is recruited into the population. Existing data are sporadic, and the long-term survival of seedlings is uncertain due to natural thinning and environmental variables (e.g., drought stress).

[2] The total known population is approximately 2,751 individuals, not including seedlings.

As shown in the table above, the largest population and suitable habitat of *E. woodburyana* is found in Sierra Bermeja, southwest Puerto Rico, a mountain range that covers approximately 3,706 acres (ac) (1,500 hectares (ha)) (USFWS 2011a, p. 17). *E. woodburyana* is known from at least four locations (subpopulations) within this area: La Tinaja Tract, Finca María Luisa (also known as Finca Escabi), Finca Lozada, and El Conuco (also known as Finca Sollins) (Envirosurvey 2020, p. 44). La Tinaja Tract is part of the LCNWR and occupies 263 ac (106.4 ha) in the foothills of Sierra Bermeja (USFWS 2011a, pp. 23, 26), and lies within the subtropical dry Forest life zone (Ewel and Whitmore 1973, p. 10; Weaver and Chinea 2003, p. 273). Although the species is not specific to this type of habitat, drainages provide moist conditions (mesic) favorable for its establishment, which may explain the higher abundance of the species at these sites. In fact, an inventory of listed plant species at La Tinaja Tract accounted for 808 adults and 271 saplings of *E. woodburyana* associated with those mesic habitats that favor germination and recruitment (Morales-Pérez 2013, p. 4; Monsegur-Rivera 2009–2018, pers. obs.; see table above). In addition, 141 seedlings were found in La Tinaja Tract, indicating evidence of recruitment (Morales- Pérez 2013, p. 7). The occurrence in Sierra Bermeja of multiple listed plants and rare endemics is the result of the little agricultural value of the steep slopes, hence little deforestation, which resulted in a refugia for those species, including *E. woodburyana*. Nonetheless, the lower slopes of Sierra Bermeja and surrounding valleys are subject to different land use practices that hinder the expansion of the species and associated native vegetation due to threats such as fires, invasive grasses, and grazing, along with dry climate conditions (Weaver and Chinea 2003, pp. 281–282).

Finca María Luisa is private land that ranges from the upper slopes of Sierra Bermeja south to the coast near La Pitahaya in the Boquerón Commonwealth Forest. This property is composed of a mosaic of habitats with different land uses that include ranching, hay production, and remnants of forested habitats. The forested habitat is adjacent to the boundaries of the

LCNWR (La Tinaja Tract) and provides connectivity to the *E. woodburyana* subpopulations, particularly on La Tinaja Tract. An assessment of Finca María Luisa identified 629 adults and 90 saplings of *E. woodburyana* (Envirosurvey 2020, p. 59, 62; see table above), as well as 105 seedlings. However, there is no information on the survival of those seedlings. This property is currently under a conservation easement managed by the nongovernmental organization Para La Naturaleza, Inc. (PLN), the operational unit of The Conservation Trust of Puerto Rico (PLN 2013). This easement provides for the conservation of the natural resources of the property, including *E. woodburyana*. However, there are some agricultural practices (e.g., grazing, forest conversion into grassland) that still threaten the species (PLN 2013, p. 56; USFWS 2017, p. 18; Envirosurvey 2020, p. 49). El Conuco is another property owned and managed for conservation by PLN in Sierra Bermeja where *E. woodburyana* is found (PLN 2014). This property is located on the west side of the mountain range, and in 2014, a subpopulation of *E. woodburyana* was reported with at least 41 individuals (USFWS 2014, p. 2). The latest survey indicates that there are at least 88 adults and 8 saplings of *E. woodburyana* on this property (Envirosurvey 2020, p. 62, 63; see table above). A total of 20 seedlings also were documented during this assessment, but there is no information on their long-term survival.

Finca Lozada is a private property located west of La Tinaja Tract, and with similar habitat to La Tinaja. In 2007, a rapid assessment of *E. woodburyana* was conducted on this property and estimated the subpopulation at around 300 individuals (USFWS 2017, p. 9).

E. woodburyana also was known from the area of Peñones de Melones in the Boquerón Ward of Cabo Rojo. This site is a western extension of the Sierra Bermeja habitat, but at lower elevations, and it has been subject to deforestation mainly for agriculture and urban development (USFWS 2017, p. 14). However, there are no current data on the status of this population, and *E. woodburyana* is presumed extirpated from this area due to the extensive deforestation and development that occurred during the early 2000s. In addition, there is a single record of the species from the CRNWR, but this locality has not been surveyed recently due to lack of

information on the specific location of the individual. However, the CRNWR is currently a reintroduction site for *E. woodburyana*.

As previously stated, the known range of *E. woodburyana* increased when the species was located on private land (Río Loco population) at the Almácigo Bajo Ward near the southeast boundary of the Susúa Commonwealth Forest (SCF). This is the only population that occurs in the boundaries of the subtropical dry and moist forests life zones (Ewel and Whitmore 1973, pp. 25, 72). The latest information from this site indicates the *E. woodburyana* population is composed of at least 120 adults and 226 saplings (USFWS 2017, p. 9; see table above). Despite the relatively disturbed nature of this area, a total of 211 seedlings also were documented during the assessment, but their current survival is unknown (USFWS 2017, p. 9). In fact, due to the proximity of this population to the SCF, and the availability and continuity of suitable habitat, we would expect to find additional *E. woodburyana* individuals along the southeastern portion of the SCF.

The GCF is a natural area comprising one of the best remnants of subtropical dry forest vegetation in Puerto Rico (Monsegur-Rivera 2009, p. 3). Elevation ranges from 0 to 228 m (0 to 748 ft) above sea level (Murphy et al. 1995, p. 179), and the landscape includes a variable topography with a mixture of hills and deep canyons or ravines that provides adequate conditions for the occurrence of *E. woodburyana*. There are four localities within the GCF where subpopulations of this species have been documented: Cañón Hoya Honda, Cañón Murciélagos, Cañón Las Eugenias, and Cañón Las Trichilias (Monsegur-Rivera 2009–2018, pers. obs.; see table above). The currently known number of *E. woodburyana* individuals at the GCF is approximately 69 adults and 47 saplings (USFWS 2017, p. 8). Also, 31 seedlings were found in the GCF, but no information is available regarding their survival (USFWS 2017, p. 8).

The known range of *E. woodburyana* extends north to the hills along Montes de Barinas in a habitat similar to the GCF (Monsegur-Rivera 2009–2018, pers. obs.). This tract of privately owned lands is located primarily along Indios Ward in the municipality of Guayanilla, and

Cambalache Ward in the municipality of Yauco. Due to the marginal agricultural value of these areas, the forest was partially logged for charcoal production and ranching; fortunately, the prime habitat for native and endemic plant species remained undisturbed (see *Unit 3* description in 79 FR 53315, September 9, 2014, on p. 53326). The forested habitats at Montes de Barinas and the GCF are separated by an agricultural valley along the Yauco River. In fact, this geographical range overlaps with the designated critical habitat of *Varronia rupicola* (see *Unit 3* descriptions in 79 FR 53315, September 9, 2014, on pp. 53326, 53339). The number of individuals of *E. woodburyana* at this location is limited to one record (see table above). However, most of the habitat remains unexplored; thus, further surveys are necessary to determine the size of this population (Monsegur-Rivera 2009–2018, pers. obs.).

Similar habitat extends east to private lands in the area of Punta Cucharas, along Encarnación and Canas Wards between the municipalities of Peñuelas and Ponce in southern Puerto Rico. This area also lies within the designated critical habitat for *Varronia rupicola* (see *Unit 4* descriptions in 79 FR 53315, September 9, 2014, on pp. 53326, 53339). Here, *E. woodburyana* is known from at least three subpopulations: Peñon de Ponce, Puerto Galexda, and the former right-of-way of the proposed gas pipeline Gasoducto Sur, with an estimated minimum number of 30 individuals growing mainly along drainages on the northwest-facing slopes with greater moisture retention (Monsegur-Rivera 2009–2018, pers. obs.; USFWS 2017, p. 10; see table above). The current forest structure and absence of exotic plant species suggest this habitat has remained mainly undisturbed, explaining the presence of rare species like *Buxus vahlii* (Vahl's boxwood, an endemic species with limited seed dispersal mechanism) in the area. Thus, the presence of additional subpopulations of *E. woodburyana* in this area is very likely.

The newest record indicating the expansion of the species' known range is from a specimen collected at the Puerto Rico National Guard's Camp Santiago in the municipality of Salinas. This site is about 18.6 miles (30 km) east from the nearest known locality in Punta Cucharas in a habitat composed of remnants of native dry forest. Camp Santiago covers an area

of 12,787.6 ac (5,175 ha) and is located south of the central mountain range of Puerto Rico (Acevedo-Rodríguez 2014, p. 15).

Population Summary

As summarized in the table above, the known populations of *E. woodburyana* (Sierra Bermeja, Almácigo Bajo, Yauco, Guánica Commonwealth Forest, Montes de Barinas, Punta Cucharas (Ponce-Peñuelas) and Salinas) comprise approximately 2751 adult and juvenile individuals. Based on the available information indicates at least 808 adults and 271 saplings of *E. woodburyana* occur within the boundaries of La Tinaja Tract within the LCNWR (Sierra Bermeja population) (Morales-Pérez 2013, p. 4; see table above). In addition, the subpopulation of Finca María Luisa is composed of at least 692 adults and 90 saplings (Envirosurvey 2020, p. 47; see table above). In the case of El Conuco, the subpopulation is 88 adults and 8 saplings (Envirosurvey 2020, p. 51; see table above). When evaluating the combined data from La Tinaja Tract, Finca María Luisa, El Conuco, and Finca Lozada as the whole Sierra Bermeja population, the total number of adults (1,888) and saplings (369) consists of 2,257 individuals within this population. In addition, at least 269 seedlings (144 in La Tinaja Tract, 105 in Finca Maria Lucia, and 20 in El Conuco) have been recorded in this population (Morales-Pérez 2013, p. 7; Envirosurvey 2020, pp. 47, 51). Although we recognize the occurrence of seedlings, we did not include them in the total number of *E. woodburyana* in this population because their fate is unknown due to the lack of long-term monitoring. For example, seedling survival can be compromised by environmental variables like droughts, particularly in the dry forest habitat where the species occurs. Still, 1,888 adult plants represents a demonstrable increase compared to the number known at the time when the species was listed (45 individuals) or even at the time the recovery plan was published (150 individuals in 1998). The presence of different size classes shows that the *E. woodburyana* population in Sierra Bermeja has been resilient to past and current threats (e.g., unsustainable agricultural practices, grazing, fires, invasive plant species) as suggested by its natural recruitment, reflected in the actual number of adults and saplings. Based

on aerial images, and because the vegetation structure in neighboring lands is similar to areas with documented presence of *E. woodburyana*, we anticipate the species extends beyond our surveyed area in Sierra Bermeja. Nonetheless, *E. woodburyana* appears to be absent from areas previously deforested and degraded to grasslands dominated by exotics (e.g., *Megathyrsus maximus* (guinea grass)), and it is mainly restricted to those areas that provide favorable conditions for its establishment (e.g., drainages) (Weaver and Chinea 2003, entire; Morales-Pérez 2013, p. 4; Monsegur-Rivera 2009–2018, pers. obs.; Envirosurvey 2020, pp. 46, 51). Similar to Sierra Bermeja, the Almácigo Bajo (also known as Río Loco) population also shows evidence of natural recruitment and resiliency to previous habitat disturbance. The latest comprehensive survey of this population resulted in 346 individuals, corresponding to 120 adults and 226 saplings (USFWS 2017, p. 11; see table above). Despite the relatively disturbed nature of this area, it harbors a higher proportion of seedlings (38 percent) than that of Sierra Bermeja (10.5 percent) (USFWS 2016, p. 5; USFWS 2017, pp. 9, 10), which most likely is the result of the moist understory conditions in the drainages where the species is found that provide for better seed germination and seedling establishment. Nonetheless, even though this population is the more structurally proportionate, the recruitment of those seedlings into the population is uncertain.

At the GCF, the subpopulation at Cañón Murciélagos (also known as Dinamita Trail) is relatively small (i.e., 27 adults and 39 saplings (USFWS 2016, p. 8). Further assessment of the subpopulation at Cañón Las Eugenias (also known as Cueva Trail) in the GCF found 31 adults and 8 saplings (USFWS 2016, p. 8). A third subpopulation at Cañón Hoya Honda is composed of about 10 adult individuals (Monsegur-Rivera 2009–2018, pers. obs.). A total of 31 seedlings were found at Cañón Murciélagos (29) and Cañón Las Eugenias (2) (USFWS 2019, p. 8), but their current survival is unknown. The populations of Montes de Barinas, Punta Cucharas, and Camp Santiago are recent additions to the species' known range, and further systematic inventories are needed in order to determine the extent and trends of these populations.

Nonetheless, these very small populations are characterized by little or no recruitment (e.g., Acevedo-Rodríguez 2014, p. 15).

Recovery

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. Under section 4(f)(1)(B)(ii), recovery plans must, to the maximum extent practicable, include 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 List of Endangered and Threatened Wildlife or the List of Endangered and Threatened Plants.

Recovery plans provide a roadmap for us and our partners on methods of enhancing conservation and minimizing threats to listed species, as well as measurable criteria against which to evaluate progress towards recovery and assess the species' likely future condition. However, they are not regulatory documents and do not substitute for the determinations and promulgation of regulations required under section 4(a)(1) of the Act. A decision to revise the status of a species, or to delist a species, is ultimately based on an analysis of the best scientific and commercial data available to determine whether a species is no longer an endangered species or a threatened species, regardless of whether that information differs from the recovery plan.

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all of the criteria in a recovery plan being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently and that the species is robust enough that it no longer meets the definition of an endangered species or a threatened species. In other cases, we may discover new recovery opportunities after having finalized the recovery plan. Parties seeking to conserve the species may use these opportunities instead of methods identified in the recovery plan. Likewise, information on the species that was not known at the time the

recovery plan was finalized may become available later. The new information may change the extent that criteria need to be met for recognizing recovery of the species. The recovery of species is a dynamic process requiring adaptive management that may, or may not, fully follow the guidance provided in a recovery plan.

The following discussion provides an analysis of the recovery criteria and goals as they relate to evaluating the status of the taxon.

Recovery Criteria

The recovery plan for this species did not provide downlisting criteria (USFWS 1998, entire). In 2019, the Service published an amendment to the original recovery plan, which amended the recovery criteria of this species by establishing that *E. woodburyana* will be considered for delisting when the following criteria are met (USFWS 2019, p. 4): (1) Threat reduction and management activities are implemented to a degree that the species will remain viable into the foreseeable future; (2) existing natural populations of *E. woodburyana* (6 populations) show a stable or increasing trend, as evidenced by natural recruitment and multiple age classes; and (3) within the historical range, at least three new populations of *E. woodburyana* are established on lands protected by a conservation mechanism that show a stable or increasing trend, evidenced by natural recruitment and multiple age classes. We apply our current understanding of the species' range, biology, and threats to these delisting criteria to support our rationale for why downlisting *E. woodburyana* is appropriate.

Recovery Criteria 1: Threat reduction and management activities are implemented to a degree that the species will remain viable into the foreseeable future.

Throughout the known range, the species still faces a wide variety of threats; however, some locations show improvement in management and protection activities are ongoing by a variety of partners. Overall, about 47 percent of the currently known *E. woodburyana* individuals occur within lands managed for conservation. As previously stated, the GCF is managed for conservation by PRDNER as recommended by the Master Plan for the Commonwealth Forests

of Puerto Rico (DRN 1976, p. 56). In addition, *E. woodburyana* is currently listed as critically endangered under PRDNER regulations and was most recently evaluated in 2004 (PRDNER 2005, p. 52). Consequently, that agency reviews all proposed actions for the GCF that may adversely affect *E. woodburyana* and other listed species and their habitats within the GCF. There is evidence of impacts on seedlings (e.g., uprooting, covered by sediment) of other species that share habitat with *E. woodburyana* at the GCF due to runoff and sediments resulting from hurricane María in September 2017 (Monsegur-Rivera 2018, pers. obs.). Hence, seedlings of *E. woodburyana* can also suffer these same impacts. Moreover, although this population may not face the same threats as in Sierra Bermeja because the habitat is protected, its expansion outside drainages may be limited by the dry climate of the forest characteristic of dry forests with recurrent disturbance (e.g., Weaver and Chinea 2003, p. 281). However, during a rapid assessment of *E. woodburyana* conducted at the GCF, no changes in habitat or evidence of activities affecting this species were observed (USFWS 2017, p. 8).

As for LCNWR, in 1996, the Service acquired La Tinaja Tract, a 263-ac (106.4-ha) tract in the foothills of Sierra Bermeja (USFWS 2011a, pp. 23, 26). This land is now protected and managed for the conservation of natural resources, with a comprehensive conservation plan that includes measures for the protection and recovery of endangered and threatened species, including *E. woodburyana* (USFWS 2011a, p. 35; Service 2011b, p. 47). As part of an existing Service cooperative recovery initiative project, a new fence was built along the upper southeast and southwest boundaries of La Tinaja Tract to reduce habitat modification from cattle grazing (mostly trampling, which damages the species, erodes soil, and opens up space to invasive plant species), and to allow the recovery of native vegetation.

Recovery actions like land acquisition and the establishment of conservation easements also have been undertaken to prevent habitat loss and degradation, and potential population decline. For example, PLN has two natural protected areas in Sierra Bermeja: the conservation easement Finca María Luisa (755.6 ac (305.8 ha)), and the Natural Protected Area El Conuco

(37.4 ac (15.1 ha)) (PLN 2013, 85 pp.; PLN 2014, 58 pp.). As discussed above, both properties harbor subpopulations of *E. woodburyana* (PLN 2014, p. 13; Envirosurvey 2020, p. 44). Habitat management practices implemented at El Conuco include cattle exclusion, firebreaks, and a reforestation plan, providing suitable conditions for natural recruitment and the expansion of the *E. woodburyana* population (PLN 2013, 85 pp.). However, in the case of the Finca María Luisa easement, the conservation practices included in the management plan developed by PLN for this property have not yet been implemented.

Information gathered post-listing indicated that the known range of *E. woodburyana* has expanded to new localities: Montes de Barinas, Almácigo Bajo, Punta Cucharas, and the Puerto Rico National Guard's Camp Santiago in the municipality of Salinas. These areas collectively comprise approximately 14 percent of the currently known number of adults and saplings of *E. woodburyana*. However, all these locations are subject to habitat destruction or modification as described below under **Summary of Biological Status and Threats**, making the species in these areas vulnerable to habitat encroachment or even extirpation. For instance, Almácigo Bajo is relatively disturbed by cattle grazing and fence post harvesting.

Therefore, threat reduction and management activities at Finca María Luisa or Finca Lozada, Montes de Barinas, Almácigo Bajo, Punta Cucharas, and the Puerto Rico National Guard's Camp Santiago have not been implemented to a degree that these *E. woodburyana* subpopulations are secure in the long term. We continue to work with partners to provide beneficial management practices (e.g., firebreaks, fencing, reforestation) throughout the species' range, as well as to monitor *E. woodburyana* and survey suitable habitat for new occurrences of this species. Further, we are also looking for opportunities to implement best management practices with private landowners to enhance habitat to establish additional *E. woodburyana* subpopulations. We consider recovery criterion 1 to have been partially met.

Recovery criterion 2: existing natural populations of *E. woodburyana* show a stable or increasing trend

We are seeing significant progress in achieving this criterion, but it has not yet been fully met. The presence of different size classes in three (i.e., Sierra Bermeja, Almácigo Bajo, and GCF) out of the six existing *E. woodburyana* populations suggests a certain degree of stability, and that the species has been resilient to past and current threats at these sites. However, additional indicators related to population structure are still needed to indicate long-term stability.

For example, Sierra Bermeja is the largest known population, with 2,526 individuals, including seedlings, but the proportion of adults, saplings, and seedlings is 75, 14.5, and 10.5 percent, respectively. Despite being the largest population, its structure is skewed towards adult individuals, with low frequency of saplings and seedlings (Envirosurvey 2020, pp. 51–52). This leads us to expect reduced recruitment, which can have negative implications for the long-term viability of the population and the species. Additionally, microhabitat conditions make it unlikely the population can expand to adjacent native forest. In fact, recruitment is limited to the close proximity of parental trees, which is apparently driven by gravity in the drainages where the species is present (Morales-Pérez, 2013, p. 4). In an effort to improve the conditions of existing populations of *E. woodburyana*, the Service, PRDNER, and PLN have joint efforts to enhance or augment the natural population within Sierra Bermeja (i.e., La Tinaja Tract and neighboring private lands). While we estimate that a timeframe of 10 to 15 years is needed for the planted individuals to reach reproductive size, this should increase the self-sustainability of the species and will help it withstand stochastic events (e.g., severe droughts). Similar efforts are needed in other areas (e.g., GCF, Montes de Barinas, Punta Cucharas, and Almácigo Bajo) to further improve the species' status and secure its representation rangewide. At present, however, the GCF *E. woodburyana* population appears stable (USFWS 2017, p. 8).

Similar to Sierra Bermeja, the *E. woodburyana* population in the GCF is mostly found in drainages dominated by native forest vegetation, which provides adequate habitat conditions (i.e., humidity) for the establishment of seedlings and saplings. However, there is little

information about the ability of *E. woodburyana* to survive stochastic events such as landslides and heavy sediment runoff, particularly in these drainages.

The population at Almácigo Bajo appears to be relatively large and stable, despite cattle grazing and fence post harvesting, with multiple age classes resulting from natural recruitment. This may be the result of the mesic understory conditions due to its geographical location in the transition between the subtropical dry and moist forest life zones (Ewel and Whitmore 1973, pp. 25, 72). The proportion of seedlings to adults observed in Almácigo Bajo (38 percent) is higher when compared to the Sierra Bermeja (10.5 percent) and GCF (21 percent) populations. In addition, the proximity of this population to suitable and protected habitat in the SCF provides favorable conditions for its natural expansion or for planting additional individuals (population enhancement) to assist its expansion. As mentioned previously, we are seeing significant progress in achieving this criterion, but it has not yet been fully met.

Recovery criterion 3: at least three new populations of *E. woodburyana* are established on lands protected by a conservation mechanism that show a stable or increasing trend

Efforts for this criterion are ongoing. Currently, the Service and other partners have initiated the establishment of a new *E. woodburyana* population at the CRNWR, where 191 *E. woodburyana* individuals had been planted by 2019 (Envirosurvey 2020, p. 17). This habitat is forested with native vegetation, has low intrusion of exotic grasses (e.g., *Megathyrsus maximus*), and provides moisture that would facilitate the establishment of seedlings. Also, the CRNWR maintains firebreaks along the boundaries of the refuge, which help protect this site from human-induced fires. Two years of monitoring after planting have shown a survival rate greater than 96 percent (Envirosurvey 2020, p. 17), demonstrating that the proper selection of reintroduction sites is critical to maximize the survival of planted material. Further efforts are needed to establish two new self-sustainable populations within the species' range. Therefore, we have not met this recovery criterion.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and the implementing regulations in title 50 of the Code of Federal Regulations set forth the procedures for determining whether a species is an endangered species or a threatened species, issuing protective regulations for threatened species, and designating critical habitat for endangered and threatened species. In 2019, jointly with the National Marine Fisheries Service, the Service issued a final rule that revised the regulations in 50 CFR part 424 regarding how we add, remove, and reclassify endangered and threatened species and the criteria for designating listed species' critical habitat (84 FR 45020; August 27, 2019). On the same day, the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (84 FR 44753; August 27, 2019). We collectively refer to these as the 2019 regulations.

However, on July 5, 2022, the U.S. District Court for the Northern District of California vacated the 2019 regulations (*Center for Biological Diversity* v. *Haaland*, No. 4:19-cv-05206-JST, Doc. 168 (N.D. Cal. July 5, 2022) (*CBD* v. *Haaland*)), reinstating the regulations that were in effect before the effective date of the 2019 regulations as the law governing species classification and critical habitat decisions. Subsequently, on September 21, 2022, the U.S. Circuit Court of Appeals for the Ninth Circuit stayed the district court's July 5, 2022, order vacating the 2019 regulations until a pending motion for reconsideration before the district court is resolved (*In re: Cattlemen's Ass'n*, No. 22-70194). The effect of the stay is that the 2019 regulations are the governing law as of September 21, 2022.

Due to the continued uncertainty resulting from the ongoing litigation, we also undertook an analysis of whether the proposal would be different if we were to apply the pre-2019 regulations. That analysis, which we describe in a separate memo in the decisional file and have

posted on *https://www.regulations.gov*, concludes that we would have reached the same proposal if we had applied the pre-2019 regulations.

The Act defines an "endangered species" as a species that is in danger of extinction throughout all or a significant portion of its range, and a "threatened species" as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether any species is an endangered species or a threatened species because of any of the following factors:

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

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

(C) Disease or predation;

(D) The inadequacy of existing regulatory mechanisms; or

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

These factors represent broad categories of natural or human-caused actions or conditions that could have an effect on a species' continued existence. In evaluating these actions and conditions, we look for those that may have a negative effect on individuals of the species, as well as other actions or conditions that may ameliorate any negative effects or may have positive effects. We consider these same five factors in downlisting a species from endangered to threatened (50 CFR 424.11(c)).

We use the term "threat" to refer in general to actions or conditions that are known to or are reasonably likely to negatively affect individuals of a species. The term "threat" includes actions or conditions that have a direct impact on individuals (direct impacts), as well as those that affect individuals through alteration of their habitat or required resources (stressors). The term "threat" may encompass—either together or separately—the source of the action or condition or the action or condition itself.

However, the mere identification of any threat(s) does not necessarily mean that the species meets the statutory definition of an "endangered species" or a "threatened species." In determining whether a species meets either definition, we must evaluate all identified threats by considering the expected response by the species, and the effects of the threats—in light of those actions and conditions that will ameliorate the threats—on an individual, population, and species level. We evaluate each threat and its expected effects on the species, then analyze the cumulative effect of all of the threats on the species as a whole. We also consider the cumulative effect of the threats in light of those actions and conditions that will have positive effects on the species—such as any existing regulatory mechanisms or conservation efforts. The Secretary determines whether the species meets the definition of an "endangered species" or a "threatened species" only after conducting this cumulative analysis and describing the expected effect on the species now and in the foreseeable future.

The Act does not define the term "foreseeable future," which appears in the statutory definition of "threatened species." Our implementing regulations at 50 CFR 424.11(d) set forth a framework for evaluating the foreseeable future on a case-by-case basis. The term "foreseeable future" extends only so far into the future as the Services can reasonably determine that both the future threats and the species' responses to those threats are likely. In other words, the foreseeable future is the period of time in which we can make reliable predictions. "Reliable" does not mean "certain"; it means sufficient to provide a reasonable degree of confidence in the prediction. Thus, a prediction is reliable if it is reasonable to depend on it when making decisions. It is not always possible or necessary to define foreseeable future as a particular number of years. Analysis of the foreseeable future uses the best scientific and commercial data available and should consider the timeframes applicable to the relevant threats and to the species' likely responses to those threats in view of its life-history characteristics. Data that are typically relevant to assessing the species' biological response include species-specific factors such as lifespan, reproductive rates or productivity, certain behaviors, and other demographic factors.

Analytical Framework

The 5-year review (USFWS 2017) documents the results of our comprehensive biological status review for the species, including an assessment of the potential threats to the species. The following is a summary of the key results and conclusions from the 5-year review and information gathered since that time, including information provided in the proposed rule published on October 21, 2020 (85 FR 66906). The 5-year review can be found at Docket No. FWS-R4-ES-2019-0070 on *https://www.regulations.gov*.

Summary of Biological Status and Threats

Habitat Loss

Habitat destruction and modification were identified as factors affecting the continued existence of *E. woodburyana* when it was listed in 1994 (59 FR 46715; September 9, 1994). The area of Peñones de Melones in Cabo Rojo is the only historical site for which the Service has strong evidence that *E. woodburyana* was extirpated. This site was estimated to have 20 individuals (Breckon 1996, unpublished data) and was impacted by residential and tourist development, and by agricultural practices such as livestock grazing (USFWS 2017, p. 18). While the species now occupies significantly more area and localities than were known at the time of listing and 73 percent of these sites occur in protected areas, it still faces the threat of habitat destruction and modification in several populations as described below and in our October 21, 2020, proposed rule (85 FR 66906).

As previously discussed, the Sierra Bermeja range comprises the core known natural population of *E. woodburyana*, with about 82 percent of the currently known adults and saplings found in this area. Most of this mountain range was zoned by the Puerto Rico Planning Board as a District of Conservation of Resources and Rustic Soil Specially Protected, which has specific restrictions on development activities in order to protect the natural resources of the area (Junta de Planificación Puerto Rico (JPPR) 2009, pp. 151–153). This zoning designation allows agricultural activities and construction of residential development (JPPR 2009, p. 151; JPPR

2015, pp. 118–129). Therefore, landowners continue to affect the habitat through activities like cutting new access roads on their properties (Pacheco and Monsegur-Rivera 2017, pers. obs.).

In addition, deforestation for agricultural practices (e.g., conversion of forested habitat to pasturelands) has led to invasion of exotic species like guinea grass (*Megathyrsus maximus*), thus promoting favorable conditions for wildfires that further adversely affect *E. woodburyana* habitat (Weaver and Chinea 2003, p. 281). Also, cattle, horses, and goats graze all over the Sierra Bermeja range, causing habitat modification by making trails while foraging on the slopes, which also increases erosion (Morales-Pérez 2013, p. 4; Envirosurvey 2016, p. 9; Lange and Possley 2017, p. 4; Envirosurvey 2020, p. 49). Cattle grazing has resulted in direct impacts to *E. woodburyana* due to predation and trampling of seedlings (Lange and Possley 2017, p. 4). In fact, cattle trails were observed through a patch of *E. woodburyana* at Finca María Luisa, and at La Tinaja Tract, horses trampled several planted individuals of the species (Morales-Pérez 2013, p. 7; Envirosurvey 2016, p. 8). Such impacts (e.g., trampling and predation) from livestock are likely one of the reasons for the low number of seedlings of *E. woodburyana* in Sierra Bermeja (Envirosurvey 2020, p. 49).

Currently, two of the four subpopulations in Sierra Bermeja are protected because they occur on lands managed for conservation (i.e., La Tinaja Tract and El Conuco), representing approximately 43 percent of all known adults and saplings. The remaining two subpopulations (i.e., Finca María Luisa and Finca Lozada) represent about 39 percent of all known adults and saplings, and are subject to habitat destruction and modification for agricultural practices, which most likely have eliminated some *E. woodburyana* individuals (USFWS 2017, p. 18). Based on a comparison of a recent aerial photograph (2019) of this area, habitat modification through bulldozing has occurred within the area identified for conservation in the conservation easement of Finca María Luisa (Monsegur-Rivera 2019, pers. obs.; PLN 2013, p. 56). In addition to direct impacts to the species, bulldozing results in habitat fragmentation and degradation that change the microhabitat conditions needed for the successful recruitment of *E. woodburyana.* It also

facilitates the invasion of exotic plant species such as guinea grass (*Megathyrsus maximus*) that compete with *E. woodburyana* and promote favorable conditions for wildfires.

The *E. woodburyana* populations at Punta Cucharas, Montes de Barinas, and Almácigo Bajo occur in privately owned lands that are vulnerable to habitat modification. For example, the habitat in the municipalities of Peñuelas and Ponce, including the area of Punta Cucharas, has been fragmented by urban development (see 79 FR 53303, September 9, 2014). In this area, the species occurs in at least three forested drainages located just north and close to highway PR 2, or adjacent to the Puerto Rico Electric and Power Authority power line right-of-way. Urban development has expanded north of highway PR 2, modifying the suitable habitat for the species (USFWS 2017, p. 20). On October 4, 2011, areas with *E. woodburyana* individuals at Puerto Galexda (Ponce-Peñuelas) were bulldozed, and some individuals were removed (USFWS 2011c, entire; USFWS 2017, p. 20). The Service observed that sediment runoff from adjacent urban development was covering the bottom of the drainage and likely precluding the recruitment of *E. woodburyana* seedlings as the sediment buries the small plants and seeds (USFWS 2011c, p. 3).

In Montes de Barinas, *E. woodburyana* occurs on private properties subject to urban development, resulting in native dry forest encroachment, and thus isolation and possible extirpation of *E. woodburyana* individuals. These areas also are threatened by deforestation due to cattle grazing and the extraction of fence posts (Román-Guzmán 2006, pp. 1–2; Monsegur-Rivera 2005, pers. obs.; see 79 FR 53303, September 9, 2014).

The *E. woodburyana* population at Almácigo Bajo Ward in Yauco is located in a small forested drainage in a parcel of land used for cattle grazing, and adjacent to an abandoned quarry (USFWS 2017, p. 19), which could be reactivated. Approximately 80 percent of the property was cleared of vegetation, and its surroundings are under pressure by agricultural and urban development (USFWS 2017, p. 19). Habitat modification and adverse impacts to *E. woodburyana* individuals also have been documented as a result of fence post extraction from this site (Monsegur-Rivera 2011–2017, pers. obs.). In 2008, 72 seedlings and saplings of *E.*

woodburyana were found in a human-made ditch located approximately 45 m (148 ft) downhill of the Almácigo Bajo population (USFWS 2017, p. 19). A total of 46 saplings from this area were transplanted into the SCF to avoid being impacted by a project of the Puerto Rico Aqueduct and Sewage Authority (USFWS 2017, p. 11). The latest account of the transplanting effort indicates that only 11 individuals survived, but they appear to be in good condition (USFWS 2017, p. 11).

Human-induced Fires

Human-induced fires have been documented in *E. woodburyana* habitat, and were considered a threat to the species when listed (59 FR 46715, September 9, 1994; USFWS 2017, p. 23). Fires are not a natural event in the subtropical dry forests in Puerto Rico, and the native vegetation in the Caribbean is not adapted to this type of disturbance (Brandeis and Woodall 2008, p. 557; Santiago-García et al. 2008, p. 604). Human-induced fires could modify the landscape by promoting the establishment of exotic trees and grasses, and by diminishing the seed bank of native species (Brandeis and Woodall 2008, p. 557). For example, the exotic guinea grass is well-adapted to fires and typically colonizes areas previously covered by native vegetation before a fire event. Furthermore, the presence of guinea grass and other grass species increases the amount of fuel for, and hence the intensity of, the fires. Seedling mortality after fires is related to the differences in fuel loads and different fire intensities (Santiago-García et al. 2008, p. 607).

E. woodburyana populations occur on the driest region of Puerto Rico where fires are sometimes ignited accidentally or deliberately, particularly during the dry season. Human-induced fires are a current threat to this and other native vegetation in Sierra Bermeja, Almácigo Bajo, Punta Cucharas, and Camp Santiago in Salinas (Envirosurvey 2020, p. 52). In May 2019, a large wildfire extended from the southern lowlands of Sierra Bermeja to the upper forested hills into El Conuco, affecting an undetermined number of individuals of *E. woodburyana* and encroaching on suitable habitat for the species (Envirosurvey 2020, p. 52). In La Tinaja Tract,

LCNWR staff maintains firebreaks on the lower slopes, reducing the chance of fires reaching the upper part of the tract.

The recently discovered site at Camp Santiago in Salinas is owned by the Puerto Rico National Guard (Acevedo- Rodríguez 2014, p. 15). The areas covered by vegetation at this camp are frequently impacted by human-induced fires, which may compromise the survival of *E. woodburyana* (Acevedo- Rodríguez 2014, p. 15). According to Acevedo- Rodríguez (2014, p. 2), the predominant vegetation type is grasslands dominated by guinea grass, which are maintained by human-induced fires and grazing animals.

Fires also have occurred in *E. woodburyana* habitat in Punta Cucharas, between the municipalities of Ponce and Peñuelas, where habitat disturbance due to urban development and the expansion of highway PR 2 has promoted the establishment of guinea grass (Monsegur-Rivera 2011 and 2013, pers. obs.). Camp Santiago is another area where fires, which occur near *E. woodburyana* on a yearly basis (Monsegur-Rivera 2009–2018, pers. obs.), have been identified as a threat to the species due to anthropogenic disturbance (Acevedo-Rodríguez 2014, p. 15). At the GCF, *E. woodburyana* seems to be protected from fires, as the species mostly occurs in mesic (humid) drainages dominated by native forested vegetation where the risk of fires is low (Monsegur-Rivera 2011, pers. obs.).

Competition from Nonnative Plant Species

Nonnative plant species are another threat to *E. woodburyana.* Some nonnative plants can be very aggressive and compete with native species for sunlight, nutrients, water, and ground cover (see 79 FR 53303, September 9, 2014, at pp. 53309–53310). Examples include the exotic tree *Leucaena leucocephala,* which can remain as a dominant canopy species for at least 80 years (Wolfe 2009, p. 2), and guinea grass, which colonizes habitat and suppresses native vegetation (Rojas-Sandoval and Meléndez-Ackerman 2013, p. 489). Both *L. leucocephala* and guinea grass are fire-adapted species that have widely colonized *E. woodburyana* habitat and outcompete native vegetation (Monsegur-Rivera 2018, pers. obs.; Envirosurvey 2020, p. 46).

In addition, some exotic plants create favorable conditions for fires, as in Camp Santiago in Salinas, where degraded habitat is dominated by guinea grass, threatening *E. woodburyana* (Acevedo-Rodríguez 2014, p. 15). As demonstrated by the research conducted in the GCF, restoring degraded habitat to native vegetation may require decades, and, in some cases, such damage may be irreversible (Wolfe 2009, p. 2). Although the core *Eugenia woodburyana* individuals are found in protected areas dominated by native forest vegetation rather than invasive species, the threat of invasive or exotic plant species intruding into *E. woodburyana* habitat persists due to the vulnerability of the area to fires as explained above.

Based on the above information, we believe that human-induced fires and invasive plants are a threat to *E. woodburyana*, particularly to those populations extending into private lands where habitat modifications and human-induced fires commonly occur.

In summary, at present, the *E. woodburyana* population at the GCF occurs within an area managed for conservation, and thus it is not subject to habitat destruction and modification. The Sierra Bermeja population is the largest and is partially protected as some of the individuals occur either on Federal (i.e., La Tinja Tract-LCNWR) or private lands managed for conservation (i.e., El Conuco). The remaining four populations (i.e., Almácigo Bajo, Montes de Barinas, Punta Cucharas, and Camp Santiago) occur on private and State lands currently threatened by habitat destruction and modification (e.g., urban development; vegetation clearing; road construction; grazing and trampling by cattle, horses, and goats; and military maneuvers at Camp Santiago). Losing these populations would result in a reduction of the genetic representation and redundancy of the species.

In addition, human-induced fires and invasive species are considered as further stressors to the viability of *E. woodburyana*. Human-induced fires have been documented in *E. woodburyana* habitat, particularly on private lands where no fire management practices are implemented and have the potential to adversely affect the species. Invasive species can preclude the establishment of *E. woodburyana* as they are very successful competing for sunlight,

nutrients, water, and ground cover. Establishment of invasive species is facilitated by disturbances caused by fires and habitat modification. Fortunately, there are *E. woodburyana* subpopulations in protected areas dominated by native forest vegetation that does not facilitate the invasion of exotic plant species. However, in lands where habitat modification activities do occur, invasive plant species colonize and make the habitat unsuitable for *E. woodburyana*, and also promote conditions for fires.

Existing Regulatory Mechanisms

In the final listing rule (59 FR 46715; September 9, 1994), we identified the inadequacy of existing regulatory mechanisms as one of the factors affecting the continued existence of *E. woodburyana*. At that time, the species had no legal protection because it had not been included in Puerto Rico's list of protected species. Once *E. woodburyana* was federally listed, it triggered the addition of the species as endangered to the Commonwealth's list of protected species (DRNA 2004, p. 52). Such Commonwealth regulations are expected to continue in place and protect the species despite its reclassification to threatened. If the territory would like to remove the species, it would need to go through a review process by the agency.

Presently, *E. woodburyana* is legally protected under Commonwealth's Law No. 241–1999 (see title 12 of the Laws of Puerto Rico at section 107 et seq. (12 L.P.R.A. sec. 107 et seq.)), known as *Nueva Ley de Vida Silvestre de Puerto Rico* (New Wildlife Law of Puerto Rico). The purpose of this law is to protect, conserve, and enhance both native and migratory wildlife species; declare property of Puerto Rico all wildlife species within its jurisdiction; and regulate permits, hunting activities, and exotic species, among other activities. This law also has provisions to protect habitat for all wildlife species, including plants. In 2004, the PRDNER approved Regulation 6766 or *Reglamento para Regir el Manejo de las Especies Vulnerables y en Peligro de Extinción en el Estado Libre Asociado de Puerto Rico* (Regulation 6766: To govern the management of threatened and endangered species in the Commonwealth of Puerto Rico). Article 2.06 of Regulation 6766 prohibits collecting, cutting, and removing, among other

activities, listed plant individuals within the jurisdiction of Puerto Rico (DRNA 2004, p. 11). The provisions of Law No. 241–1999 and Regulation 6766 extend to private lands and will continue protecting *E. woodburyana* whether or not the species has protections under the Act.

As for the individuals found at the GCF, this area is protected under Law No. 133–1975 (12 L.P.R.A. sec. 191 et seq.), known as *Ley de Bosques de Puerto Rico* (Puerto Rico Forests' Law), as amended in 2000. Section 8(a) of this law prohibits cutting down, killing, bud pruning, uprooting, or otherwise injuring or deteriorating any tree, forest product, or vegetation within a Commonwealth Forest (12 L.P.R.A. sec. 198(a)) and thus reduces potential impacts to native vegetation including *Eugenia woodburyana*. The PRDNER also identified the GCF as a Critical Wildlife Area (CWA). The CWA designation constitutes a special recognition by the Commonwealth with the purpose of providing information to Commonwealth and Federal agencies about the conservation needs of these areas, and to assist permitting agencies in precluding adverse impacts as a result of a project's endorsements or permit approvals (PRDNER 2005, pp. 211–216).

The LCNWR and CRNWR are managed in accordance with the National Wildlife Refuge Improvement Act of 1997 (Pub. L. 105–57). The collection of plants on National Wildlife Refuges is prohibited under 50 CFR 27.51, and there are prohibitions concerning plants federally listed as endangered or threatened that occur on areas under Federal jurisdiction, as well as on other areas, in section 9 of the Act and implementing regulations. In addition, any habitat management or action (e.g., research) within a National Wildlife Refuge requires a Special Use Permit in coordination with the Refuge manager, thus, reducing potential impacts to *E. woodburyana*. Additionally, the comprehensive conservation plans for LCNWR and CRNWR include measures for the protection and recovery of endangered and threatened species, including *E. woodburyana*, on these refuges (USFWS 2011a, p. 35; USFWS 2011b, p. 47).

Although there are legal mechanisms in place for the protection of *E. woodburyana* (e.g., laws, regulations, zoning), sometimes the enforcement of such mechanisms on private lands is

challenging (e.g., USFWS 2019, pp. 29–31). For example, accidental damage (e.g., by cutting, pruning, or mowing) or even extirpation of *E. woodburyana* individuals may occur because private landowners may not be aware that it is a protected species (e.g., fence posts harvesting in Almácigo Bajo (USFWS 2016, p. 8)). Another form of impact is from agriculture; for example, zoning may restrict subdivision of lots and dense urbanization in some areas where the species is present, but may allow agricultural practices that can result in habitat modification that can affect *E. woodburyana.* On the other hand, the known range of *E. woodburyana* has increased since the time of listing. The species has been recorded in new areas subject to agriculture and urban development (USFWS 2016, entire; USFWS 2017, pp. 18–21), and despite the existence of regulatory mechanisms, habitat modification has occurred in these newly documented areas (e.g., Almacigo Bajo site; USFWS 2017, pp. 18–21).

Outside of the protections provided by the Act, as described above, the species is protected from collection and provided management considerations by the National Wildlife Refuge Improvement Act of 1997 on two refuges. In addition, the Commonwealth of Puerto Rico legally protects *E. woodburyana* as an endangered species, including protections to its habitat, through Commonwealth Law No. 241–1999 and Regulation 6766. When *E. woodburyana* is reclassified to threatened (see **DATES**, above), we do not expect it to be removed from legal protection by the Commonwealth. Although these protections extend to both public and private lands, protection of this species on private land is challenging. Habitat that occurs on private land is subject to pressures from grazing and development. Accidental damage or extirpation of individuals has occurred due to lack of awareness by private landowners or other parties on the property (Román-Guzmán 2006, pp. 25–33; USFWS 2016, entire). Habitat modifications continue to occur on private lands, which can increase the chances of sediment runoff and human-induced fires (and subsequent spread of nonnative vegetation). In short, this plant is now more abundant and widely distributed, and occurs largely on conservation land, so effects due to inadequacy of regulatory mechanisms have been reduced. However, the

occurrences of this species on private land continue to need enforcement, attention, and increased outreach to explain the species' importance.

Small Population Size

At the time of listing (59 FR 46715; September 9, 1994), the Service considered small population size as a threat affecting the continued survival of *E. woodburyana* based on the species' limited distribution (i.e., only three isolated populations known at that time) coupled with low number of individuals (i.e., only 45 individuals throughout the species' range). Information about the distribution and abundance gathered since this species was listed shows that *E. woodburyana* is more abundant and widely distributed than previously thought (USFWS 2017, entire). Thus, we no longer consider limited distribution and low population numbers as threats to this species. Even though some of the known populations are small (e.g., Montes de Barinas), there are other populations with large numbers of individuals (e.g., Sierra Bermeja), and that show recruitment (e.g., Almácigo Bajo), which with proper management will allow the species to persist into the future even if one of the very small populations is adversely affected.

Hurricanes and Other Weather Events

The islands of the Caribbean are frequently affected by hurricanes. Puerto Rico has been hit by four major hurricanes in recent years: Hugo (1989), Hortense (1996), Georges (1998), and María (2017). Successional responses to hurricanes can influence the structure and composition of plant communities in the Caribbean islands (Van Bloem et al. 2003, p. 137; Van Bloem et al. 2005, p. 572; Van Bloem et al. 2006, p. 517; Lugo 2000, p. 245). Examples of the visible effects of hurricanes on the ecosystem include massive defoliation, snapped and wind-thrown trees, large debris accumulations, landslides, debris flows, and altered stream channels (Lugo 2008, p. 368). Hurricanes can produce sudden and massive tree mortality, which varies among species, but average about 41.5 percent (Lugo 2000, p. 245). Hence, small populations of *E. woodburyana* may be severely impacted by hurricanes, sometimes resulting in extirpation of relic individuals. The recent hurricane María caused defoliation and uprooting of some *E.*

woodburyana individuals planted at the CRNWR, and even though none have died, they are stressed due to the damage to the root system (Monsegur-Rivera, Service 2017, pers. obs.).

As an endemic to the Caribbean, *E. woodburyana* is adapted to tropical storms and the prevailing environmental conditions. However, the number of populations, and the small numbers of individuals in some populations (e.g., Camp Santiago and Montes de Barinas), make some populations and thereby the species vulnerable to stochastic and catastrophic events such as hurricanes. Based on observations of the damage caused by hurricane María, small *E. woodburyana* populations, such as those of the GCF, Montes de Barinas, Punta Cucharas, and Camp Santiago, may be extirpated if any of those areas is directly impacted by a category 4 or 5 hurricane that will cause high levels of wind, knocking over trees or uprooting them leading to stress or possible death. Therefore, we believe hurricanes can be a threat to *E. woodburyana*, particularly to small populations dominated by adult reproductive individuals, because intensity and frequency of these natural disturbances is expected to increase due to climate change (see *Climate Change,* below).

Landslides and sediment runoff associated with atmospheric disturbances may also pose a threat to *E. woodburyana*, particularly in Sierra Bermeja, GCF, Punta Cucharas, and Almácigo Bajo (Morales-Pérez 2013, pp. 5, 12). At these locations, adult mature individuals, as well as seedlings and saplings, are mostly found on steeper slopes or along the bottom of deep natural drainages (USFWS 2016, p. 5). High rainfall associated with tropical storms and hurricanes may cause floods that, in combination with steep topography and highly erodible soils, may lead to mass wasting events (e.g., land, mud, and debris slides; Lugo 2008, p. 368). In fact, in September 2009, three landslides resulting from heavy rains were recorded in Sierra Bermeja adjacent to the area where *E. woodburyana* occurs (USFWS 2010, p. 16). Moreover, surveyors observed that runoff and erosion exposed the roots of *E. woodburyana* in Sierra Bermeja (Envirosurvey 2020, p. 51). As mentioned above, the Service has evidence of impacts to seedling recruitment by sediment runoff from adjacent urban development in the area of Punta Cucharas in Ponce

(USFWS 2011c, p. 2). Events like this may be exacerbated by severe rains associated with hurricanes or storms. Recent observations identified uprooted and buried seedlings of the endangered palo de rosa (*Ottoschulzia rhodoxylon*) and bariaco (*Trichilia triacantha*), which share habitat with *E. woodburyana* in the GCF, due to sediment runoff and flooding events associated with hurricane María on September 20, 2017 (Monsegur-Rivera 2018, pers. obs.). Similar observations have been recorded from the area of Punta Cucharas, where seedlings of bariaco were adversely affected by sediment runoff (USFWS 2011c, entire). There is little information about *E. woodburyana*'s ability to survive stochastic events like landslides and heavy sediment runoff. However, the small size of some populations and the seedling establishment on moist drainages mean that events such as those mentioned may have adverse impacts on this species.

Climate Change

The Intergovernmental Panel on Climate Change (IPCC) concluded that evidence of warming of the climate system is unequivocal (IPCC 2014, p. 3). Observed effects associated with climate change include widespread changes in precipitation amounts and aspects of extreme weather including droughts, heavy precipitation, heat waves, and a higher intensity of tropical cyclones (IPCC 2014, p. 4). Rather than assessing climate change as a single threat in and of itself, we examined the potential consequences to the species' viability and its habitat that arise from changes in environmental conditions associated with various aspects of climate change. Based on what is known about the distribution of *E. woodburyana* and the habitat where it is more abundant (i.e., steep slopes and bottom of deep natural drainages), we believe climate change can have adverse effects on this species, particularly in its natural recruitment, and hence the expansion of populations.

We examined a downscaled model for Puerto Rico based on three IPCC global emissions scenarios from the CMIP3 data set: mid-high (A2), mid-low (A1B), and low (B1) as the CMIP5 data set was not available for Puerto Rico at that time (Henareh Khalyani et al. 2016, pp. 267,

279–280). These scenarios are generally comparable and span the more recent representative concentration pathways (RCP) scenarios from RCP 4.5 (B1) to RCP 8.5 (A2) (IPCC 2014, p. 57). Under all these scenarios, emissions increase, precipitation declines, and temperature and total dry days increase, resulting in extreme drought conditions that would result in the conversion of sub-tropical dry forest into dry and very dry forest (Henareh Khalyani et al. 2016, p. 280).

There is high uncertainty in precipitation modeling for the region, as Caribbean rainfall is influenced by complexities in large-scale atmosphere and ocean dynamics (Henareh Khalyani et al. 2016, p. 275). Modeling shows dramatic changes to Puerto Rico through 2100; the divergence in these projections increases dramatically after mid-century, making projections beyond 20 to 30 years more uncertain (Henareh Khalyani et al. 2016, p. 275). By mid-21st century, Puerto Rico is predicted to be subjected to a decrease in rainfall, along with increase drought intensity (Henareh Khalyani et al. 2016, p. 265; U.S. Global Change Research Program (USGCRP) 2018, p. 20:820). As precipitation decreases influenced by warming, it will tend to accelerate the hydrological cycles, resulting in wet and dry extremes (Jennings et al. 2014, p. 4; Cashman et al. 2010, p. 1). There are indications that the western region of Puerto Rico, where *E. woodburyana* occurs, has experienced negative trends in annual rainfall (PRCCC 2013, p. 7).

Downscaled general circulation models (GCMs) developed by Henareh Khalyani et al. (2016, p. 275) predicted dramatic shifts in the life zones of Puerto Rico with potential loss of subtropical rain, moist, and wet forest, and the appearance of tropical dry and very dry forests are anticipated. This shift in life zones may result in potential species migration to higher elevations; however, the extent of the species' ability to redistribute will depend on dispersal capability and forest connectivity (Henareh Khalyani et al. 2019, p. 11). Subtropical dry forests are already subject to water deficit for 10 months of the year and are expected to become drier in the future; particularly in the Caribbean, where oceans have a largest influence on local precipitation, climate models consistently project significant drying by the middle of the century (Miller and

Lugo 2009, p. 86; USGCRP 2018, p. 20:820). For example, droughts may compromise seedling recruitment by reducing seed viability and increasing seedling mortality. We have already seen a low proportion of *E. woodburyana* seedlings and saplings at lower elevations and outside drainages in areas like Sierra Bermeja and Punta Cucharas that are probably associated with anthropogenic impacts (e.g., human-induced fires, habitat modification). The inability of *E. woodburyana* to migrate to wetter habitats due to low seed dispersal capability and the lack of forest connectivity would reduce its survival.

Prolonged droughts can exacerbate those anthropogenic impacts by changing the microclimate conditions (i.e., temperature and soil moisture retention) favorable for the establishment of seedlings, thus reducing the recruitment of *E. woodburyana*. In Almácigo Bajo, where the Service has recorded a high proportion of seedlings and saplings compared to adults (Monsegur-Rivera 2009–2018, pers. obs.; see table above), mesic (humid) environmental conditions favor the natural recruitment of the species, contrasting with the low proportion of seedlings versus adult individuals of Sierra Bermeja (despite the partial protection of the habitat), where overall environmental conditions are drier. The lowlands and valleys surrounding Sierra Bermeja were covered by continuous forest, and these areas were deforested for agriculture, which changed the microhabitat conditions and the moisture retention of the habitat in which *E. woodburyana* evolved. For example, the populations of *E. woodburyana* at El Conuco that are located on south-facing slopes and more disturbed sites show basically no recruitment when compared to the individuals of the same populations located on the north-facing slopes, which are a dense forested habitat with moist conditions and less intrusion by exotic species.

Climate model simulations indicate an increase in global tropical cyclone intensity as well as an increase in the number of very intense tropical cyclones (USGCRP 2018, p. 2:8). Thus, it is expected that the Caribbean will experience an increase in the amount of precipitation and extreme winds produced during hurricane events (Herrera et al. 2018, p. 1). Hurricanes, followed by extended periods of drought caused by climate change, may result in changes to

microclimate that could allow other highly adaptive invasive species to establish and become harmful to the system (Lugo 2000, p. 246; Hopkinson et al. 2008, p. 255; IPCC report 2018, p. 244). In fact, as stated above, species like the exotic guinea grass can colonize and spread into *E. woodburyana* habitat after a disturbance, increasing fire propensity and altering microclimate and nutrient cycling of the habitat on which *E. woodburyana* depends. Additionally, increased heavy precipitation can augment the probability of landslides and sediment runoff in those steep areas where *E. woodburyana* is abundant and severely affect the species (Morales-Pérez 2013, pp. 5, 12). In general, increasing hurricane intensity and frequency, along with *E. woodburyana*'s small populations, a low number of individuals in most populations, the species' low recruitment rate, and habitat degradation and fragmentation, are likely to have adverse consequences for this species and its habitat.

As stated above, projected climate conditions will likely have direct or at least indirect adverse effects on *E. woodburyana* and its habitat. Some general patterns associated with forest ecosystems in Puerto Rico (PRCCC 2013, p. 14) that can affect *E. woodburyana,* are increased seasonality in precipitation and decreased soil moisture availability, which will alter flowering and fruiting patterns; affect seedling germination and survival; and result in changes in forest species composition, structure, and ecological functions. Also, intense storms will increase disturbance, changing plant succession and biomass, leading to novel communities (likely dominated by exotic plant species). Despite the evidence that some terrestrial plant populations have the ability to adapt and respond to changing climatic conditions (Franks et al. 2013, entire), a long-term monitoring of known *E. woodburyana* populations is needed to determine whether this species will be resilient to, or be able to adapt to, these stressors.

In summary, the limited distribution and low number of individuals were considered a threat to *E. woodburyana* when listed. Recent information indicates the species is more abundant and widely distributed than previously thought. Currently, other natural and manmade factors, such as hurricanes and climate change are considered stressors to *E. woodburyana*.

Hurricanes can result in massive mortality of trees, and particularly can affect or even extirpate small populations of *E. woodburyana*. Hurricane María caused defoliation and uprooting of *E. woodburyana* planted individuals at the CRNWR (Monsegur-Rivera 2017, pers. obs.), however population-level effects were not verified. Stochastic events, such as landslides and heavy sediment runoff, particularly caused by hurricanes, also can threaten *E. woodburyana* because of the occurrence of core populations of this species in steep areas in Sierra Bermeja where landslides have been documented near them.

Also, it is expected that *E. woodburyana* will be affected by changes in climatic conditions. Effects associated with climate change include droughts, heavy precipitation, and intense tropical storms and hurricanes. For *E. woodburyana*, a reduction in precipitation in a subtropical dry forest where precipitation is already reduced, may compromise its phenology, seed viability, seedling recruitment, and seedling survival. Intense hurricanes, followed by extended periods of drought may result in changes in microclimate conditions that can favor the establishment invasive species that can compete with *E. woodburyana*. Additionally, increased heavy precipitation during hurricanes can produce landslides and sediment runoff in steep areas where *E. woodburyana* occurs, affecting its survival and recruitment (Morales-Pérez 2013, pp. 5, 12; Envirosurvey 2020, p. 51). Moreover, extreme wind events may result in the direct mortality of individuals and extirpation of small populations (e.g., Montes de Barinas and Salinas). Overall, the effects of a changing climate on *E. woodburyana* can be exacerbated by its reduced number of populations, low number of individuals in most populations, and habitat degradation and fragmentation, which can affect the viability of the species into the future.

Summary of Threats

We have carefully assessed the best scientific and commercial information available regarding the threats faced by *E. woodburyana* in developing this rule. Based on the analysis above, even though we no longer consider limited distribution as a threat to this species, we believe that habitat destruction and modification (e.g., forest conversion into pasturelands) on

privately owned lands and other factors, such as human-induced fires, livestock, invasive plant species, hurricanes, and climate change (droughts), continue to threaten *E. woodburyana* populations despite these threats being reduced in some areas.

Species viability, or the species' ability to survive long term, is related to the species' ability to withstand catastrophic population and species-level events (redundancy), to adapt to changing environmental conditions (representation), and to withstand stochastic disturbances of varying magnitude and duration (resiliency). The viability of a species is also dependent on the likelihood of new stressors or continued threats now and in the future that act to reduce a species' redundancy, representation, and resiliency. Redundancy of populations is needed to provide a margin of safety for a species to withstand catastrophic events.

We further evaluated the biological status of this species both currently and into the future, considering the species' viability as characterized by its resiliency, redundancy, and representation. *E. woodburyana* has demonstrated resilience to both natural and anthropogenic disturbances. However, seedlings remain susceptible to the effects of droughts and habitat modification, which can affect the recruitment and long-term viability of *E. woodburyana*.

Currently, three (i.e., Sierra Bermeja, GCF, and Almácigo Bajo) of the six known *E. woodburyana* populations show some degree of natural recruitment. The observed resiliency of the species may have occurred in part due to the availability of suitable habitat where some of the subpopulations are found, which allowed some recruitment. To further natural recruitment and provide even greater resiliency, more habitat protection and enhancement is needed. This would increase connectivity between subpopulations, maximizing the likelihood of crosspollination and gene flow, increasing fruit production and viable seeds. In addition, the remaining small and isolated populations (i.e., Monte Barinas, Punta Cucharas, and Camp Santiago) need to be enhanced and protected.

We have no data on the genetic variability of *E. woodburyana* to inform representation. However, this species occurs in a wide range of habitats and environmental conditions,

suggesting that the species was widely distributed in the past and it may have an ample genetic plasticity that would allow the species to adapt to different habitat and environmental changes. Although *E. woodburyana* is still thriving in these environments, its representation basically relies on the genetic contribution of only two populations, Sierra Bermeja and GCF, as these subpopulations are well connected. The remaining four populations are isolated, with only a very few individuals and lack of recruitment, except for the Almácigo Bajo population. This population occurs on a private land adjacent to a former quarry and where harvesting of *E. woodburyana* and other species for fence posts has been documented (USFWS 2017, p. 19). The loss or reduction of the Almácigo Bajo population would represent an important impact to the species' conservation due to its higher recruitment rate, and its presumed genetic uniqueness as it is the only one occurring within the subtropical moist forest life zone. Three of the known populations are small in numbers, isolated, and not effectively reproducing. Therefore, we believe the overall representation of *E. woodburyana* is low to moderate.

We consider that *E. woodburyana's* redundancy has increased since listing but remains low to moderate as it is only known from six populations throughout its geographical range. Moreover, three of these populations—Montes de Barinas (1 adult individual), Punta Cucharas (30 adult individuals), and Camp Santiago (1 adult individual)—are very small with no current evidence of natural recruitment, making them more vulnerable to catastrophic events such as human-induced fires, hurricanes, and droughts, which affect seedling establishment (Acevedo-Rodríguez 2014, p. 15). In fact, *E. woodburyana* has not been observed naturally expanding or colonizing into degraded habitat outside the areas where it is known to occur, particularly where the largest populations are found (i.e., Sierra Bermeja, GCF, and Almácigo Bajo). The populations on Montes de Barinas and Camp Santiago are the most vulnerable to extirpation if not managed and enhanced. The loss of the Montes de Barinas, Punta Cucharas, and Camp Santiago individuals (the easternmost populations) will reduce the redundancy of the species.

Although population numbers and abundance of *E. woodburyana* have increased, and some identified threats have decreased, our analysis indicates that, because of the remaining threats and stressors, the species remains likely to become in danger of extinction in the foreseeable future throughout all of its range. Based on biological factors and stressors to the species' viability, we consider 30 years to be the foreseeable future within which we have a reasonable degree of confidence in the predictions. The foreseeable future for the individual threats varies. Projections out to the year 2100 show increases in temperature and decreases in precipitation (Henareh Khalyani et al. 2016, pp. 274–275). However, divergence in temperature and precipitation projections increases dramatically after mid-century, depending on the scenario (Henareh Khalyani et al. 2016, p. 275), making projections beyond 20 to 30 years uncertain. Therefore, our ability to predict stressors associated with climate change is reduced beyond mid-century. Thus, using 30 years as the foreseeable future accounts for the effects of predicted changes in temperature, the shifting of life zones, and increasing droughts. Additionally, the species has been listed for more than 25 years, so we have a baseline to understand how populations have performed in that period.

This time period includes multiple generations of the species and allows adequate time for impacts from conservation efforts or changes in threats to be observed through population responses. For example, this timeframe accounts for the species' reproductive biology because it reflects the time required by an individual plant of *E. woodburyana* to reach a reproductive size and effectively contribute to the next generations. It accounts for reaching maturity, the probability of flowering, effective cross-pollination, setting viable fruits, seed germination, and seedling survival and establishment, considering environmental stochastic events such as drought. Furthermore, the established timeframe provides for the design and implementation of conservation strategies to protect and enhance currently known populations. It also accounts for continued collaboration with partners (e.g., PRDNER and PLN) to implement effective propagation and reintroduction of *E. woodburyana,* and to implement best management practices

to reduce impacts from agricultural practices that will reduce incidence of human-induced fires and promote habitat connectivity.

Determination of *Eugenia woodburyana*'s Status

Section 4 of the Act (16 U.S.C. 1533), and its implementing regulations at 50 CFR part 424, set forth the procedures for determining whether a species meets the definition of "endangered species" or "threatened species." The Act defines an "endangered species" as a species that is in danger of extinction throughout all or a significant portion of its range, and a "threatened species" as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species meets the definition of "endangered species" or "threatened species" because of any of the following factors: (A) The present or threatened destruction, modification, or curtailment of its habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.

Status Throughout All of Its Range

After evaluating threats to the species and assessing the cumulative effect of the threats under the Act's section 4(a)(1) factors, we carefully examined the best scientific and commercial information available regarding the past, present, and future threats faced by this plant. We reviewed the information available in our files and other available published and unpublished information, and we consulted with recognized experts and State/Territory agencies. In considering factors that might constitute threats to a species, we must look beyond the exposure of the species to a factor to evaluate whether it responds to the factor in a way that causes impacts to the species or is likely to cause impacts in the future. If a species responds negatively to such exposure, the factor may be a threat, and, during the status review, our aim is to determine whether impacts are or will be of an intensity or magnitude to place the species at risk. The factor is a threat if it drives, or contributes to, the risk of extinction of the species such that

the species warrants listing as an endangered or threatened species as those terms are defined by the Act. This does not necessarily require empirical proof of a threat. The combination of exposure and some corroborating evidence of how the species is likely affected could suffice. In sum, the mere identification of factors that could affect a species negatively is not sufficient to compel a finding that listing is appropriate; we require evidence that these factors act on the species to the point that the species meets the definition of an endangered or threatened species.

At the time of listing (59 FR 46715; September 9, 1994), the known range of *E. woodburyana* consisted of 45 individuals distributed among 3 localities in southwestern Puerto Rico. The most serious threats to such a small number of individuals were habitat destruction and modification, inadequacy of existing regulatory mechanisms, and limited distribution. Currently, *E. woodburyana* exists across a broader geographic range in six populations composed of several subpopulations. Increased survey efforts and implementation of recovery actions have resulted in more occupied habitat identified, leaving open the potential of finding even more *E. woodburyana* individuals. Protection under the Act, as well as Commonwealth laws and regulations, has reduced unauthorized take of the species, although accidental damage to the species has occurred due to lack of knowledge of the species by private landowners. Also, about 47 percent of the total known natural adults and saplings are found on Federal, Commonwealth, and private lands managed for conservation and where the species is protected.

Although now known to be more widespread and abundant than previously thought, the other 53 percent of known adult and saplings occur on lands where they are threatened by habitat destruction and modification (e.g., conversion of forested habitat into pasturelands; grazing by cattle, horses, and goats; and urban development). In addition, recent information indicates that threats from invasive species, human-induced fires, droughts, hurricanes, landslides, and sediment runoff are currently acting upon *E. woodburyana*. Some of these threats could be more severe for the populations on lands where, for example, there are no fire management prevention practices implemented, making the species more vulnerable to impacts.

We have determined that the previously recognized impacts to *E. woodburyana* from inadequate regulatory mechanisms that occurred prior to listing in 1994 by the Commonwealth of Puerto Rico have been reduced, and limited distribution is no longer impacting *E. woodburyana*. In summary, there continues to be concern about the present or threatened destruction, modification, or curtailment of *E. woodburyana*'s habitat or range (specifically, conversion of forested land into pasturelands; grazing by cattle, horses, and goats; and urban development) and other natural or manmade factors affecting *E. woodburyana*'s continued existence (specifically, invasive species, human-induced fires, droughts, hurricanes, landslides, and sediment runoff) throughout the species' known range, particularly for those populations on private lands. The existing regulatory mechanisms are not adequate to address these threats at this time. The species is not affected by stressors related to overcollection, disease, or predation. Still, none of the identified threats is an imminent threat or of a magnitude such that the taxon warrants endangered status across its range. Thus, after assessing the best available information, we conclude that *E. woodburyana* is not currently in danger of extinction throughout all of its range, but is likely to become in danger of extinction within the foreseeable future throughout all of its range.

Status Throughout a Significant Portion of Its Range

Under the Act and our implementing regulations, a species may warrant listing if it is in danger of extinction or likely to become so in the foreseeable future throughout all or a significant portion of its range. The court in *Center for Biological Diversity* v. *Everson*, 435 F. Supp. 3d 69 (D.D.C. 2020) (*Center for Biological Diversity*), vacated the aspect of the Final Policy on Interpretation of the Phrase "Significant Portion of Its Range" in the Endangered Species Act's Definitions of "Endangered Species" and "Threatened Species" (79 FR 37578; July 1, 2014) that provided that the Service does not undertake an analysis of significant portions of a species' range if the species warrants listing as threatened throughout all of its range. Therefore, we proceed to evaluating whether the species is endangered in a significant portion of

its range—that is, whether there is any portion of the species' range for which both (1) the portion is significant; and (2) the species is in danger of extinction in that portion. Depending on the case, it might be more efficient for us to address the "significance" question or the "status" question first. We can choose to address either question first. Regardless of which question we address first, if we reach a negative answer with respect to the first question that we address, we do not need to evaluate the other question for that portion of the species' range.

Following the court's holding in *Center for Biological Diversity*, we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (i.e., endangered). In undertaking this analysis for *E. woodburyana,* we address the status question first—we consider information pertaining to the geographic distribution of both the species and the threats that the species faces to identify any portions of the range where the species is endangered.

For *E. woodburyana,* we considered whether the threats are geographically concentrated in any portion of the species' range. We examined the following threats: Habitat destruction and modification (particularly by urban development and grazing by cattle, horses, and goats); human-induced fires; invasive species; hurricanes, landslides, and sediment runoff; and the effects of climate change (e.g., prolonged droughts and expected shifts of life zones). As discussed above, these threats are acting upon the species across its range. We have identified that habitat modification is threatening four of the six *E. woodburyana* known populations. In addition, human-induced fires and invasive plant species are considered as further stressors to the viability of *E. woodburyana,* particularly on private lands throughout the known range of the species where no fire management practices are implemented. It is also expected that *E. woodburyana* will be affected by changes in climatic conditions, particularly by generalized changes in precipitation and drought conditions, and by the shifting of life zones, as suggested by downscaled models developed for Puerto Rico. In fact, climate change is expected to result in more intense hurricanes and extended periods of droughts, and effects to *E. woodburyana* from

these will be exacerbated by a reduced number of the species' populations, the low number of individuals in most populations, and habitat degradation and fragmentation. Small populations are scattered throughout the range of the species and many are recently discovered. We have no evidence at present to say that these small populations are the result of a concentration of threats, instead, it appears it may simply represent increased survey effort in previously under-surveyed areas. The threats listed above either occur throughout the range or may affect populations in ways we cannot predict well, at present, therefore we have no evidence of a concentration of threats in any portion of the species range. Thus, there are no portions of the species' range where the species has a different status from its rangewide status. Therefore, no portion of the species' range provides a basis for determining that the species is in danger of extinction in a significant portion of its range, and we determine that the species is likely to become in danger of extinction within the foreseeable future throughout all of its range. This is consistent with the courts' holdings in *Desert Survivors* v. *Department of the Interior*, 321 F. Supp. 3d 1011, 1070-74 (N.D. Cal. 2018), and *Center for Biological Diversity* v. *Jewell*, 248 F. Supp. 3d, 946, 959 (D. Ariz. 2017) because, in reaching this conclusion, we did not apply the aspects of the Final Policy, including the definition of "significant" that those court decisions held to be invalid.

Determination of Status

Our review of the best available scientific and commercial information indicates that *E. woodburyana* does not meet the definition of an endangered species in accordance with sections 3(6) and 4(a)(1) of the Act, but this plant does meet the definition of a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act. Therefore, we are downlisting *E. woodburyana* from endangered to threatened on the List of Endangered and Threatened Plants.

Available Conservation Measures

Conservation measures provided for species listed as endangered or threatened species under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing results in public awareness,

and conservation by Federal, State, Tribal, and local agencies; private organizations; and individuals. The Act encourages cooperation with the States and other countries and calls for recovery actions to be carried out for listed species. The protection required by Federal agencies and the prohibitions against certain activities are discussed, in part, below.

The primary purpose of the Act is the conservation of endangered and threatened species and the ecosystems upon which they depend. The ultimate goal of such conservation efforts is the recovery of these listed species, so that they no longer need the protective measures of the Act. Section 4(f) of the Act calls for the Service to develop and implement recovery plans for the conservation of endangered and threatened species. The recovery planning process involves the identification of actions that are necessary to halt or reverse the species' decline by addressing the threats to its survival and recovery. The goal of this process is to restore listed species to a point where they are secure, self-sustaining, and functioning components of their ecosystems.

Revisions of the plan may be done to address continuing or new threats to the species, as new substantive information becomes available. The recovery plan identifies site-specific management actions that set a trigger for review of the five factors that control whether a species may be downlisted or delisted, and methods for monitoring recovery progress. Recovery plans also establish a framework for agencies to coordinate their recovery efforts and provide estimates of the cost of implementing recovery tasks.

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States, Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.,* restoration of native vegetation), research, propagation and reintroduction, and outreach and education. The recovery of many listed species cannot be accomplished solely on Federal lands because their range may occur primarily or solely on non-Federal lands. To achieve recovery of these species requires cooperative conservation efforts on private, State, Territory, and Tribal lands where appropriate. Funding for recovery actions could become available from a

variety of sources, including Federal budgets, State programs, and cost share grants from non-Federal landowners, the academic community, and nongovernmental organizations. We invite you to submit any new information on this species whenever it becomes available (see **FOR FURTHER INFORMATION CONTACT**).

Section 7(a) requires Federal agencies to evaluate their actions with respect to any species that is listed as an endangered or threatened species. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR part 402. Section 7(a)(2) of the Act requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of the species. If a Federal action may affect a listed species, the responsible Federal agency must enter into consultation with the Service.

It is our policy, as published in the *Federal Register* on July 1, 1994 (59 FR 34272), to identify to the maximum extent practicable at the time a species is listed, those activities that would or would not constitute a violation of section 9 of the Act. The intent of this policy is to increase public awareness of the effect of a final listing on proposed and ongoing activities within the range of a listed species. The discussion below regarding protective regulations under section 4(d) of the Act complies with our policy. The Act allows the Secretary to promulgate protective regulations for threatened species pursuant to section 4(d) of the Act. We are finalizing a set of regulations to provide for the conservation of the species in accordance with section 4(d). This rule, which includes a description of the kinds of activities that would or would not constitute a violation, complies with this policy.

II. Final Rule Issued Under Section 4(d) of the Act

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S. Supreme Court has noted that statutory language like "necessary and advisable" demonstrates a large degree of deference to the agency (see *Webster*

v. *Doe*, 486 U.S. 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided pursuant to the Act are no longer necessary. Additionally, the second sentence of section 4(d) of the Act states that the Secretary may by regulation prohibit with respect to any threatened species any act prohibited under section 9(a)(1), in the case of fish or wildlife, or section 9(a)(2), in the case of plants. Thus, the combination of the two sentences of section 4(d) provides the Secretary with wide latitude of discretion to select and promulgate appropriate regulations tailored to the specific conservation needs of the threatened species. The second sentence grants particularly broad discretion to the Service when adopting the prohibitions under section 9.

The courts have recognized the extent of the Secretary's discretion under this standard to develop rules that are appropriate for the conservation of a species. For example, courts have upheld rules developed under section 4(d) as a valid exercise of agency authority where they prohibited take of threatened wildlife, or include a limited taking prohibition (see *Alsea Valley Alliance* v. *Lautenbacher*, 2007 U.S. Dist. Lexis 60203 (D. Or. 2007); *Washington Environmental Council* v. *National Marine Fisheries Service*, 2002 U.S. Dist. Lexis 5432 (W.D. Wash. 2002)). Courts have also upheld 4(d) rules that do not address all of the threats a species faces (*see State of Louisiana* v. *Verity*, 853 F.2d 322 (5th Cir. 1988)). As noted in the legislative history when the Act was initially enacted, "once an animal is on the threatened list, the Secretary has an almost infinite number of options available to [her] with regard to the permitted activities for those species. [She] may, for example, permit taking, but not importation of such species, or [she] may choose to forbid both taking and importation but allow the transportation of such species" (H.R. Rep. No. 412, 93rd Cong., 1st Sess. 1973).

Exercising its authority under section 4(d) of the Act, the Service has developed a rule that is designed to address *E. woodburyana*'s specific threats and conservation needs. Although the statute does not require the Service to make a "necessary and advisable" finding with respect

to the adoption of specific prohibitions under section 9, we find that this rule as a whole satisfies the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the *E. woodburyana.* As discussed above under **Summary of Biological Status and Threats**, the Service has concluded that *E. woodburyana* is at risk of extinction within the foreseeable future primarily due to habitat destruction and modification (urban development and grazing by cattle, horses, and goats); human-induced fires; and invasive species. Additionally, other natural or manmade factors like hurricanes, landslides, sediment runoff, and the effects of climate change cause the species to be in the risk of extinction within the foreseeable future. The provisions of this 4(d) rule promote the conservation of *E. woodburyana* by encouraging the conservation of the habitat considering land use and the species' needs. The provisions of this rule are one of many tools that the Service will use to promote the conservation of *E. woodburyana*.

Provisions of the 4(d) Rule

This 4(d) rule will provide for the conservation of *E. woodburyana* by prohibiting the following activities, except as otherwise authorized or permitted: Import or export; removing and reducing to possession *E. woodburyana* from areas under Federal jurisdiction; maliciously damaging or destroying the species on any area under Federal jurisdiction; removing, cutting, digging up, or damaging or destroying the species on other area in knowing violation of any law or regulation of the Territory or in the course of any violation of a Territorial criminal trespass law; delivering, receiving, carrying, transporting, or shipping the species in interstate or foreign commerce in the course of a commercial activity; and selling or offering for sale the species in interstate or foreign commerce.

As discussed above under **Summary of Biological Status and Threats**, the present or threatened destruction, modification, or curtailment of its habitat or range (specifically, urban development; grazing by cattle, horses, and goats; human-induced fires; and invasive species), the inadequacy of existing regulatory mechanisms, and other natural or manmade factors

affecting its continued existence (specifically, hurricanes, landslides, sediment runoff, and the effects of climate change) are affecting the status of *E. woodburyana*. A range of activities have the potential to impact *E. woodburyana*, including, but not limited to, habitat conversion from forested habitat to pasture for grazing, fence posts harvesting, and land clearing for development. Regulating these activities will help preserve the species' remaining populations, slow their rate of potential decline, and decrease synergistic, negative effects from other stressors.

Despite these prohibitions regarding threatened species, we may under certain circumstances issue permits to carry out one or more otherwise-prohibited activities, including those described above. The regulations that govern permits for threatened plants state that the Director may issue a permit authorizing any activity otherwise prohibited with regard to threatened species (50 CFR 17.72). Those regulations also state that the permit shall be governed by the provisions of § 17.72 unless a special rule applicable to the plant is provided in §§ 17.73 to 17.78. Therefore, permits for threatened species are governed by the provisions of § 17.72 unless a species-specific 4(d) rule provides otherwise. However, under our recent revisions to § 17.71, the prohibitions in § 17.71(a) will not apply to any plant listed as a threatened species after September 26, 2019. As a result, for threatened plant species listed after that date, any protections must be contained in a species-specific 4(d) rule. We did not intend for those revisions to limit or alter the applicability of the permitting provisions in § 17.72, or to require that every species-specific 4(d) rule spell out any permitting provisions that apply to that species and species-specific 4(d) rule. To the contrary, we anticipate that permitting provisions would generally be similar or identical for most species, so applying the provisions of § 17.72 unless a species-specific 4(d) rule provides otherwise would likely avoid substantial duplication. Under 50 CFR 17.72 with regard to threatened plants, a permit may be issued for the following purposes: for scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or for other purposes consistent

with the purposes and policy of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

The Service recognizes the special and unique relationship with our State and Territorial natural resource agency partners in contributing to conservation of listed species. State and Territorial agencies often possess scientific data and valuable expertise on the status and distribution of endangered, threatened, and candidate species of wildlife and plants. State and Territorial agencies, because of their authorities and their close working relationships with local governments and landowners, are in a unique position to assist the Service in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Service shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State or Territorial conservation agency which is a party to a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by his or her agency for such purposes, will be able to conduct activities designed to conserve *E. woodburyana* that may result in otherwise prohibited activities for plants without additional authorization.

The Service recognizes the beneficial and educational aspects of activities with seeds of cultivated plants, which generally enhance the propagation of the species, and therefore will satisfy permit requirements under the Act. The Service intends to monitor the interstate and foreign commerce and import and export of these specimens in a manner that will not inhibit such activities, providing the activities do not represent a threat to the survival of the species in the wild. In this regard, seeds of cultivated specimens will not be regulated provided that a statement that the seeds are of "cultivated origin" accompanies the seeds or their container (e.g., the seeds could be moved across State lines or between territories for purposes of seed banking or use for outplanting without additional regulations).

Nothing in this 4(d) rule will change in any way the recovery planning provisions of section 4(f) of the Act, the consultation requirements under section 7 of the Act, or the ability of

the Service to enter into partnerships for the management and protection of *E. woodburyana*. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service.

Effects of This Rule

This rule revises 50 CFR 17.12(h) to reclassify *E. woodburyana* from endangered to threatened on the Federal List of Endangered and Threatened Plants. It also recognizes that this plant is no longer in danger of extinction throughout all or a significant portion of its range. This reclassification does not significantly change the protections afforded to this species under the Act. The prohibitions and conservation measures provided by the Act, particularly through sections 7 and 9, continue to apply to *E. woodburyana.* Federal agencies are required to consult with the Service under section 7 of the Act in the event that activities they authorize, fund, or carry out may affect *E. woodburyana.*

As applicable, recovery actions directed at *E. woodburyana* will continue to be implemented as outlined in the recovery plan for this plant (USFWS 1998, entire). Highest priority actions (also recommended as future actions in our 5-year review (USFWS 2017)) include:

(1) Develop more measurable and objective criteria to delist this species based on best available information;

(2) Continue conducting comprehensive surveys for this species within traditional and non-traditional sites to determine more details on abundance and distribution of the species;

(3) Promote conservation agreements with private landowners to protect and enhance existing populations;

(4) Work closely with the PRDNER and landowners to ensure the protection of the species and its habitat on private lands; and

(5) Continue implementing fire prevention practices in Sierra Bermeja, CRNWR, and GCF during the dry season.

Required Determinations

Regulatory Planning and Review (Executive Orders 12866 and 13563)

Executive Order 12866 provides that the Office of Information and Regulatory Affairs (OIRA) in the Office of Management and Budget will review all significant rules. OIRA has determined that this rule is not significant.

Executive Order 13563 reaffirms the principles of E.O. 12866 while calling for improvements in the nation's regulatory system to promote predictability, to reduce uncertainty, and to use the best, most innovative, and least burdensome tools for achieving regulatory ends. The executive order directs agencies to consider regulatory approaches that reduce burdens and maintain flexibility and freedom of choice for the public where these approaches are relevant, feasible, and consistent with regulatory objectives. E.O. 13563 emphasizes further that regulations must be based on the best available science and that the rulemaking process must allow for public participation and an open exchange of ideas. We have developed this rule in a manner consistent with these requirements.

Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.)

This rule does not contain information collection requirements, and a submission to the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.) is not required. We may not conduct or sponsor and you are not required to respond to a collection of information unless it displays a currently valid OMB control number.

National Environmental Policy Act (42 U.S.C. 4321 et seq.)

We have determined that environmental assessments and environmental impact statements, as defined under the authority of the National Environmental Policy Act (NEPA; 42 U.S.C. 4321 *et seq.*), need not be prepared in connection with determining a species' listing status under 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). This position was

upheld by the U.S. Court of Appeals for the Ninth Circuit (*Douglas County* v. *Babbitt*, 48 F.3d 1495 (9th Cir. 1995), cert. denied 516 U.S. 1042 (1996)).

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 (Consultation and Coordination with Indian Tribal Governments), and the Department of the 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. In accordance with Secretarial Order 3206 of June 5, 1997 (American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act), we readily acknowledge our responsibilities to work directly with Tribes in developing programs for healthy ecosystems, to acknowledge that Tribal lands are not subject to the same controls as Federal public lands, to remain sensitive to Indian culture, and to make information available to Tribes. We have determined that there are no Tribal interests affected by this rule.

References Cited

A complete list of references cited is available on *https://www.regulations.gov* under Docket No. FWS-R4-ES-2019-0070.

Authors

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

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

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

PART 17—ENDANGERED AND THREATENED WILDLIFE AND PLANTS

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

Authority: 16 U.S.C. 1361–1407; 1531–1544; and 4201–4245, unless otherwise noted.

2. Amend § 17.12, in paragraph (h), by revising the entry for "*Eugenia woodburyana*" under FLOWERING PLANTS in the List of Endangered and Threatened Plants to read as follows:

§ 17.12 Endangered and threatened plants.

* * * * *

(h) * * *

Scientific name	Common name	Where listed	Status	Listing citations and applicable rules
FLOWERING PLANTS				
* * * * * * *				
Eugenia woodburyana	No common name	Wherever found	T	59 FR 46715, 9/9/1994; 87 FR [insert *Federal Register* page where the document begins], [Insert date of publication in the *Federal Register*]; 50 CFR 17.73(e).[4d]
* * * * * * *				

3. Amend § 17.73 by adding paragraph (e) to read as follows:

§ 17.73 Special rules—flowering plants.

* * * * *

(e) *Eugenia woodburyana* (no common name).

(1) *Prohibitions.* The following prohibitions that apply to endangered plants also apply to *Eugenia woodburyana*. Except as provided under paragraph (e)(2) of this section, it is unlawful for any person subject to the jurisdiction of the United States to commit, to attempt to commit, to solicit another to commit, or cause to be committed, any of the following acts in regard to this species:

(i) Import or export, as set forth at § 17.61(b) for endangered plants.

(ii) Remove and reduce to possession the species from areas under Federal jurisdiction, as set forth at § 17.61(c)(1) for endangered plants.

(iii) Maliciously damage or destroy the species on any areas under Federal jurisdiction, or remove, cut, dig up, or damage or destroy the species on any other area in knowing violation of any law or regulation of the Territory or in the course of any violation of a Territorial criminal trespass law, as set forth at section 9(a)(2)(B) of the Act.

(iv) Engage in interstate or foreign commerce in the course of commercial activity, as set forth at § 17.61(d) for endangered plants.

(v) Sell or offer for sale in interstate or foreign commerce, as set forth at § 17.61(e) for endangered plants.

(2) *Exceptions from prohibitions.* The following exceptions from prohibitions apply to *Eugenia woodburyana:*

(i) The prohibitions described in paragraph (e)(1) of this section do not apply to activities conducted as authorized by a permit issued in accordance with the provisions set forth at § 17.72.

(ii) Any employee or agent of the Service or of a State or Territorial conservation agency that is operating a conservation program pursuant to the terms of a cooperative agreement with the Service in accordance with section 6(c) of the Act, who is designated by that agency for such purposes, may, when acting in the course of official duties, remove and reduce to possession from areas under Federal jurisdiction members of *Eugenia woodburyana* that are covered by an approved cooperative agreement to carry out conservation programs.

(iii) Individuals may engage in any act prohibited under paragraph (e)(1) of this section with seeds of cultivated specimens, provided that a statement that the seeds are of "cultivated origin" accompanies the seeds or their container.

* * * * *

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

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