BILLING CODE 4333–15

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* as Threatened and Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Proposed rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service or USFWS), propose to reclassify 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 the original listing in 1994. This proposed 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. If this proposal is finalized, *E. woodburyana* would remain protected as a threatened species under the Act. We seek information, data, and comments from the public on this proposal. We also propose to establish a rule under section 4(d) of the Act that will provide measures that are necessary and advisable for conservation of the *E. woodburyana.*

DATES: We will accept comments received or postmarked on or before [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]. We must receive requests for public hearings in writing, at the address shown in **FOR FURTHER INFORMATION CONTACT** by [INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE *FEDERAL REGISTER*].

ADDRESSES: You may submit comments on this proposed rule by one of the following methods:

Electronically: Go to the Federal eRulemaking Portal: *http://www.regulations.gov*. In the Search box, enter the Docket Number for this proposed rule, which is FWS–R4–ES–2019–0070. Then, in the Search panel on the left side of the screen, under the Document Type heading, click on the Proposed Rules link to locate this document. You may submit a comment by clicking on "Comment Now!" Please ensure that you have found the correct rulemaking before submitting your comment. Comments submitted electronically using the Federal eRulemaking Portal must be received by 11:59 p.m. Eastern Time on the closing date.

By hard copy: Submit by U.S. mail to: Public Comments Processing, Attn: FWS–R4–ES–2019–0070; U.S. Fish and Wildlife Service Headquarters, MS: JAO/1N, 5275 Leesburg Pike, Falls Church, VA 22041–3803.

We request that you send comments **only** by the methods described above. We will post all comments on *http://www.regulations.gov*. This generally means that we will post any personal information you provide us (see **Public Comments** below for more information).

Document availability: The proposed rule, list of literature cited, the 5-year review, and other supporting documents are available at *http://www.regulations.gov* under Docket No. FWS–R4–ES–2019–0070.

FOR FURTHER INFORMATION CONTACT: Edwin Muñiz, Field Supervisor, U.S. Fish and Wildlife Service, Caribbean Ecological Services Field Office, P.O. Box 491, Boquerón, Puerto Rico 00622, telephone (787) 851–7297. Individuals who use a telecommunications device for the deaf (TDD), may call the Federal Relay Service at (800) 877–8339.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Section 4 of the Act and its implementing regulations (50 CFR part 424) set forth the procedures for listing species, reclassifying species, or removing species from the Lists of Endangered and Threatened Wildlife and Plants. To list, reclassify, or delist a species, we must issue a rule in the Federal Register. This rule proposes to reclassify the *E. woodburyana* from endangered to threatened on the List.

What this document does. We propose to reclassify the plant *Eugenia woodburyana* as threatened on the Federal List of Endangered and Threatened Plants and to establish provisions under section 4(d) of the Act to ensure the continued conservation of this species.

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 discussed in this proposed rule, we conclude that the plant *E. woodburyana* no longer meets the Act's definition of endangered and should be reclassified to threatened 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 *Eugenia 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 four locations in southwest Puerto Rico, totaling approximately 150 individuals. In the 2017 5-year review, it was known from 6 populations and 2,597 individuals (not including seedlings) (Service 2017, p. 13). 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 not including seedlings (table 1). 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 *Eugenia woodburyana* still remain while others have been reduced or no longer occur. 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. For example, in May 2019, a large wildfire affected the upper forested hills of a private land in conservation in Sierra Bermeja (southwest Puerto Rico), affecting an undetermined number of individuals of *E. woodburyana* (Envirosurvey 2020, p. 52).

Information Requested

We intend that any final action resulting from this proposed rule will be based on the best scientific and commercial data available and be as accurate and as effective as possible. Therefore, we request comments or information from other concerned governmental agencies, Native American tribes, the scientific community, industry, or any other interested parties concerning this proposed rule.

We particularly seek comments concerning:

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

(a) Biological or ecological requirements of the species, including habitat requirements;

(b) Genetics and taxonomy;

(c) Historical and current range including distribution patterns;

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

(e) Current or planned activities within the geographic range of *Eugenia woodburyana* that may impact or benefit the species.

(2) Factors (threats) that may affect the continued existence of the species, which may include habitat modification or destruction, overutilization, disease, predation, the inadequacy of existing regulatory mechanisms, or other natural or manmade factors.

(3) Biological, commercial trade, or other relevant data concerning any threats (or lack thereof) to this species and existing regulations that may be addressing those threats.

(4) Additional information concerning the historical and current status, range, distribution, and population size of this species, including the locations of any additional populations of this species.

(5) Information on regulations that are necessary and advisable to provide for the conservation of *Eugenia woodburyana* and that the Service can consider in developing a 4(d) rule for the species. In particular, information concerning the extent to which we should include any of the section 9 prohibitions in the 4(d) rule or whether any other forms of take should be excepted from the prohibitions in the 4(d) rule (to the extent permitted by Commonwealth law).

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

Please note that submissions merely stating support for or opposition to the action under consideration without providing supporting information, although noted, will not be considered in making a determination, as section 4(b)(1)(A) of the Act directs that a

determination as to whether any species is a threatened or endangered species must be made "solely on the basis of the best scientific and commercial data available."

You may submit your comments and materials concerning this proposed rule by one of the methods listed in **ADDRESSES**. We request that you send comments **only** by the methods described in **ADDRESSES**.

If you submit information via *http://www.regulations.gov*, your entire comment—including any personal identifying information—will be posted on the Web site. While you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Please note that comments posted to this Web site are not immediately viewable. When you submit a comment, the system receives it immediately. However, the comment will not be publically viewable until we post it, which might not occur until several days after submission.

Comments and materials we receive, as well as supporting documentation used in preparing this proposed rule will be available for public inspection at Docket No. FWS–R4–ES–2019–0070 on *http://www.regulations.gov*.

Public Hearing

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

immediate future, we will provide these public hearings using webinars that will be announced on the Service's website, in addition to the Federal Register. The use of these virtual public hearings is consistent with our regulation at 50 CFR 424.16(c)(3).

Peer Review

In accordance with our policy published in the *Federal Register* on July 1, 1994 (59 FR 34270), and the Office of Management and Budget's Final Information Quality Bulletin for Peer Review, dated December 16, 2004, we will seek the expert opinions of at least three appropriate and independent specialists regarding the science in this proposed rule. The purpose of such review is to ensure that our determination is based on scientifically sound data, assumptions, and analyses. We will send peer reviewers copies of this proposed rule immediately following publication in the *Federal Register*. We will invite these peer reviewers to comment during the public comment period on both the proposed reclassification of *Eugenia woodburyana* and the proposed special rule. We will summarize the opinions of these reviewers in the final decision documents, and we will consider the comments and information received from peer reviewers during the public comment period on this proposed rule, as we prepare our final determination.

Because we will consider all comments and information received during the comment period, our final determination may differ from this proposal. Based on the new information we receive, we may conclude that the species status should not change and may choose to withdraw the proposal. Such a final decision would be a logical outgrowth of this proposal, as long as we: (a) base the decisions on the best scientific and commercial data available after considering all of the relevant factors; (2) do not rely on factors Congress has not intended us to consider; and (3) articulate a rational connection

between the facts found and the conclusions made, including why we changed our conclusion.

Previous Federal Actions

On September 9, 1994, we published a final rule in the *Federal Register* (59 FR 46715) listing *Eugenia woodburyana* as an endangered species. The final rule identified the following threats to *E. woodburyana*: loss of habitat due to agricultural (grazing by cattle and goats), rural, and tourist development and possibly the use of off-road vehicles within the habitat; lack of State regulations to protect this species; and the limited distribution of the species. On October 6, 1998, we published the recovery plan for this endangered plant (USFWS 1998, entire). We completed a 5-year status review on May 7, 2017 (USFWS 2017, entire). In that review, we determined that the species no longer met the definition of an endangered species and should be reclassified to threatened because new occurrences of the species had been located since completion of the recovery plan, and a substantial number of individuals had been documented (*i.e.,* 2, 567 individuals including adults and saplings).

The 5-year status review is available at *https://www.regulations.gov* at (Docket No. FWS–R4–ES–2019–0070).

For additional details on previous Federal actions, see discussion under **Recovery**, below. Also see *http://www.fws.gov/endangered/species/us-species.html* for the species profile for this plant.

I. Proposed Listing Determination

Background

Species Information

A thorough review of the taxonomy, life history, ecology, and overall viability of *Eugenia 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). *Eugenia 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).

Eugenia woodburyana may reach up to 6 m (19.8 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 shining above, and paler beneath. The fruit is an eight-winged, globose berry with a diameter of 2 cm (0.08 in) that turns red when mature (Liogier 1994, p. 407).

Reproductive Biology

The reproductive biology of *Eugenia 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 *Eugenia 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 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 honey bees (*Apis mellifera*), and pollination and fruit production appear to be the result of crosspollination, 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.). Additional propagation efforts have been conducted because *Eugenia woodburyana* is relatively easy to propagate. Over the past 10 years, the Service has worked with local partners

propagating and planting this species on lands managed for conservation in the Sierra Bermeja area (USFWS 2017, p. 11). These efforts need to be expanded to geographical areas in the proximity of the other natural populations (*e.g.,* Almácigo Bajo).

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 at an uncertain location within the 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 2013, 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-Guzman 2006, p. 25). These reports expanded the species' distribution further east within the subtropical dry limestone forest of Puerto Rico. The range of the species continued to expand: in 2008, it was located at Almácigo Bajo Ward in the municipality of Yauco (Sepúlveda 2008,

pers. comm.). 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-Rodriguez 2014, p. 15; table 1). This locality is at least 18.6 miles (30 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 1. Currently known natural populations and number of individuals (adults and saplings) of *Eugenia woodburyana* in Puerto Rico. Asterisk (*) indicates localities that are considered as subpopulations. Puerto Rico Department of Natural and Environmental Resources is indicated as PRDNER.

Population name based on geographical range	**Subpopulation name**	**Percent of the total (2,751) known adults/saplings per subpopulation[a]**	**Conservation status (protected, not protected)**	**Ownership**
Sierra Bermeja	* La Tinaja Tract (within LCNWR)	808/271 (39.2%)	Protected	USFWS
	* 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.
	* El Conuco (also known as Finca Sollins)	88/8 (3.5%)	Protected	P.R. Conservation Trust (Para La Naturaleza)
	* 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
	* Cañon Eugenias	31/8 (1.4%)	Protected	PRDNER
	* Cañon Murciélagos	27/39 (2.4%)	Protected	PRDNER

	* Cañon Las Trichilias	1 (0.04%)	Protected	PRDNER
Montes de Barinas	Finca Catalá	1 (0.04%)	Not protected	Private
Punta Cucharas (Ponce-Peñuelas)	* Peñon de Ponce	20 (0.7%)	Not protected	Private
	* Puerto Galexda	9 (0.3%)		Private
	* Gasoducto Sur ROW	1 (0.04%)		Private
Salinas	Camp Santiago	1 (0.04%)	Not protected	P.R. National Guard. Threats not managed.

[a] 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).

As shown in Table 1, the largest population and suitable habitat of *Eugenia woodburyana* is found in Sierra Bermeja, southwest Puerto Rico, a mountain range that covers approximately 3,706-ac (1,500-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 and 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 *Eugenia woodburyana*, associated to those mesic habitats that favor

germination and recruitment (Morales-Pérez 2013, p. 4, Monsegur-Rivera 2009-2018, pers. obs.; table 1). 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 hinders 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 a private land that ranges from the upper slopes of Sierra Bermeja extending 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 *Eugenia 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. 47; table 1). A total of 105 seedlings also were documented during that same assessment. 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 should provide 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 threatening 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 also 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 2014a, 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. 51; table 1). 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 *Eugenia woodburyana* was conducted on this property and estimated the subpopulation at around 300 individuals (USFWS 2017, p. 9).

Eugenia 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 *Eugenia 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 and 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; table 1). 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 *Eugenia 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.; table 1). The currently known number of *E. woodburyana* individuals at the GCF is approximately 69 adults and 47 saplings (USFWS 2017, pp. 8). Also, 31 seedlings were found in the forest, but no information is available regarding their survival (USFWS 2017, p. 8).

The range of *Eugenia 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 (79 FR 53326, September 9, 2014). 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 *V. rupicola* (Montes de Barinas Unit; 79 FR 53326, September 9, 2014). The number of individuals of *E. woodburyana* at this location is limited to one record (table 1). However, the majority 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 *V. rupicola* (Peñon de Ponce Unit) (79 FR 53326, September 9, 2014). Here, *Eugenia 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.; Service 2017, p. 10; table 1). 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* (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 5,175 ha (12,787.6 ac), and is located south of the central mountain range of Puerto Rico (Acevedo-Rodríguez 2014, p. 15).

Population Summary

Available information indicates at least 808 adults and 271 saplings of *Eugenia woodburyana* occur within the boundaries of La Tinaja Tract (Morales-Pérez 2013, p. 4; table 1). The population of Finca María Luisa is composed of at least 692 adults and 90 saplings (Envirosurvey 2020, p. 47; table 1). In the case of El Conuco, the population is 88 adults and 8 saplings (Envirosurvey 2020, p. 51; table 1). 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. In addition, at least 269 seedlings have been recorded in this population (Morales-Pérez 2013, p. 4; Envirosurvey 2020, pp. 47 and 51). Although we recognize the occurrence of seedlings, we did not include them part of the whole *E. woodburyana* 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, the current number of adult individuals represents a demonstrable increase when compared to the overall number of individuals known at the time when the species was listed (45 individuals) or even at the time the recovery plan was published (150 individuals). 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 and 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; table 1). 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 and 10), which most likely is the result of the moister understory conditions in the drainages where the species is found, and provides for better

seed germination and seedling establishment. Nonetheless, even though this population is the more structurally proportionate, the recruitment of those seedling 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 predominantly 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' 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 threatened and endangered species unless we determine that such a plan will not promote the conservation of the species. Recovery plans are not regulatory documents and are instead intended to establish goals for long-term conservation of a listed species, define criteria that are designed to indicate when the threats facing a species have been removed or reduced to such an extent that the species may no longer need the protections of the Act, and provide guidance to our Federal,

State, and other governmental and non-governmental partners on methods to minimize threats to listed species. There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may have been exceeded while other criteria may not have been accomplished, yet the Service may judge that, overall, the threats have been minimized sufficiently, and the species is robust enough, to reclassify the species from endangered to threatened or perhaps delist the species. In other cases, recovery opportunities may have been recognized that were not known at the time the recovery plan was finalized. These opportunities may be used instead of methods identified in the recovery plan.

Likewise, information on the species 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. 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 *Eugenia woodburyana* will be considered for delisting when the following criteria are met (USFWS 2019, p. 4): (1) Threat reduction and management activities have been 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; (3) Within the historic range, establish at least three (3) new populations of *E. woodburyana* 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 is appropriate.

Threat reduction and management activities described in delisting criterion number 1 have been partially met. Overall, about 47 percent of the currently known *Eugenia 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 (PRDNER 2004, p. 52). Consequently, that agency reviews all proposed actions for the GCF that may adversely affect this and other listed species and their habitat within the forest. During an *E. woodburyana* rapid assessment conducted at the GCF, no changes in habitat or evidence of activities affecting this species were observed (USFWS 2017, p. 8). Thus, as *E. woodburyana* is protected in that forest, it appears to be stable based on consistent records of estimated individuals and because no modifications in the habitat that could affect the species have occurred lately (USFWS 2017, p. 8).

As for LCNWR, in 1996 the Service acquired La Tinaja Tract, a 263-ac (106.4-ha) piece of land 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 threatened and endangered species, including *Eugenia woodburyana* (USFWS 2011a, p. 35, Service 2011b, p. 47). As part of an existing Service's Cooperative Recovery Initiative project, a new fence was built along the upper southeast and southwest boundaries of La Tinaja Tract to reduce the chances of habitat modification from cattle grazing (mostly trampling, which damages the species, erodes soil, and opens up space to invasive plant species), and allowing for 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 *Eugenia 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. The plan identifies the habitat that harbors *E. woodburyana* as a conservation area, and recommends the exclusion of cattle from those parcels (PLN 2014, pp. 36 and 56). The conservation easement also establishes that agricultural practices and urban development cannot be conducted on management units identified for conservation (PLN 2014, pp. 36 and 56).

During an assessment of Finca María Luisa, we recommended the implementation of conservation actions such as cattle exclusion and establishments of firebreaks to protect *E. woodburyana*, and to avoid additional habitat degradation (USFWS 2014b, p. 3). At present, none of these actions have been implemented. The fourth *E. woodburyana* subpopulation in Sierra Bermeja (*i.e.,* Finca Lozada) remains under pressure of cattle grazing and trampling, competition with exotic grasses, human-induced fires, and bulldozing (Lange et al. 2017, p. 4; Monsegur-Rivera 2016, pers. obs.).

Information gathered post-listing indicated that the range of *Eugenia 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 *Eugenia woodburyana*. However, all these locations are subject to habitat destruction or modification as described below in the section of biological status and threats, making the species vulnerable to habitat encroachment or even extirpation.

Therefore, we do not consider that threats reduction and management activities at Finca María Luisa, Finca Lozada, Montes de Barinas, Almácigo Bajo, Punta Cucharas, and the Puerto Rico National Guard's Camp Santiago have been implemented to a degree that these *Eugenia woodburyana* subpopulations are viable into the foreseeable future.

We look forward to improving implementation of management practices (*e.g.,* firebreaks, fencing, and reforestation) throughout the species' range, and to working with partners to continue monitoring *Eugenia woodburyana* and to survey suitable unexplored habitat in the forest in search for this species. We are also looking for opportunities to

implement best management practices with private landowners to enhance habitat to establish additional *E. woodburyana* subpopulations.

We are showing increased progress in achieving Criterion 2 which requires that existing populations show a stable or increasing trend. The presence of different size classes in three (*i.e.,* Sierra Bermeja, Almácigo Bajo, and GCF) out of the six existing *Eugenia woodburyana* populations suggests certain degree of stability, and that the species has been resilient to past and current threats at these sites (*e.g.,* unsustainable agricultural practices, grazing, fires, invasive plant species). However, when considering the population structure, that stability has not been fully achieved.

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 it being the largest population, its structure is skewed towards adult individuals, with low frequency of saplings and seedlings (Envirosurvey 2020, pp. 51-52). Thus, it is reasonable to expect a reduced recruitment on this population, which can have negative implications for the long-term viability of the species. The relative low frequency of seedlings and saplings in this population may be the result of former and ongoing habitat modifications that have changed the microhabitat conditions favorable for *Eugenia woodburyana* (Envirosurvey 2020, p. 51-52). Under such habitat conditions it is 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 were the species is present (Morales-Pérez, 2013, p. 4).

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. 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 as suggested for other areas (*e.g.,* Weaver and Chinea 2003, p. 281).

The Almácigo Bajo population appears to be relatively stable, with multiple age classes resulting from natural recruitment. The proportion of seedlings observed in Almácigo Bajo (38 percent) is higher than Sierra Bermeja (10.5 percent), and GCF (21 percent). Despite the relatively disturbed nature of this site, the population structure 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 and 72).

In an effort to improve the conditions of existing populations of *Eugenia woodburyana*, the Service, PRDNER, and PLN have joint efforts to enhance or augment the natural population of Sierra Bermeja (*i.e.,* La Tinaja Tract and neighboring private

lands). La Tinaja Tract was selected for planting based on its habitat suitability and reduced threats of habitat modification (protected land), and human-induced fires (existence of firebreaks), and to expand the natural subpopulation in that area. Despite past disturbances at this site, mainly due to cattle grazing, the area has recovered after over two decades of natural regeneration, as evidenced by a robust natural recruitment of native species (*e.g., Bucida buceras, Pisonia albida, E. spp.*; Envirosurvey 2017, p. 5). We estimate that a timeframe of 10-15 years is needed for the planted individuals to reach reproductive size. Planting to augment the number of individuals of natural populations will ensure the self-sustainability of the species and will help it withstand stochastic events (*e.g.,* severe droughts). Nonetheless, similar efforts need to be initiated at the GCF, Montes de Barinas, Punta Cucharas, and Almácigo Bajo to improve the species' status and secure its representation.

Based on the available information, despite the threats (*e.g.,* cattle grazing, fence posts harvesting) impacting the Almácigo Bajo population it is probably the closest to fulfilling this recovery criterion due to its relatively large number of individuals, multiple age classes, and geographic location. Therefore, efforts should be directed towards designing and implementing land conservation measures to address such threats at this site. 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 to assist its expansion.

Criterion 3 is ongoing and requires the establishment of at least three new populations on lands protected by a conservation mechanism that show a stable or increasing trend. Currently, the Service and other partners have initiated the

establishment of a new *Eugenia woodburyana* population at the CRNWR, where as of 2019, 191 *E. woodburyana* individuals had been planted (Envirosurvey 2020, p. 17). Here a drainage area was selected for planting this and other federally listed species (*e.g., Ottoschulzia rhodoxylon*; 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.

Regulatory and Analytical Framework

Regulatory Framework

Section 4 of the Act (16 U.S.C. 1533) and its implementing regulations (50 CFR part 424) set forth the procedures for determining whether a species is an "endangered species" or a "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 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 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. The 5-year review can be found at Docket FWS–R4–ES–2019–0070 on *http://www.regulations.gov*.

Summary of Biological Status and Threats

Habitat destruction and modification (Factor A) were identified as factors affecting the continued existence of *Eugenia woodburyana* when it was listed in 1994 (59 FR 46715, September 9, 1994). The suitable habitat for *E. woodburyana* on privately owned lands at mid elevations and gentle slopes in Sierra Bermeja had been largely modified or destroyed through deforestation mainly for agricultural practices (*i.e.,* cattle and goats grazing), and some urban development (*i.e.,* construction of houses, and roads), thus affecting the species' recruitment in those areas (USFWS 1998, p. 6). 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 being 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 (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 et al. 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 et al. 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 is 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 since 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 has eliminated some *Eugenia 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 *Eugenia 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 severely fragmented by urban development (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 right of way of a power line from the Puerto Rico Electric and Power Authority. 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 that harbored *E. woodburyana* individuals at Puerto Galexda (Ponce-Peñuelas) were bulldozed, and some individuals were gone (USFWS 2017, p. 20). We 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 2011, p. 3).

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

The *Eugenia 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). 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). Also, the reactivation of the quarry could negatively affect this population, which is less than 50 meters (164 ft) away in an adjacent natural drainage by further modifying the habitat or by direct impacts to the species (USFWS 2017, p. 19). In 2008, 72 seedlings and saplings of *E. woodburyana* were found in a human-made ditch located approximately 45 meters (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 from the Puerto Rico Aqueduct and Sewage Authority (USFWS 2017, p. 11). The latest account of the success of the transplanting effort indicates that only 11 individuals survived, but appeared to be in good condition (USFWS 2017, p. 11). Habitat modification and adverse impacts to *E. woodburyana* individuals also have been documented as a result of extraction of fence posts from this site (Monsegur-Rivera 2011-2017, pers. obs.). The recently discovered site at Camp Santiago in Salinas is owned by the Puerto Rico National Guard (Acevedo-Rodriguez 2014, p. 15). The areas covered by vegetation at

this camp are frequently impacted by human-induced fires, which compromise the survival of *E. woodburyana* (Acevedo-Rodriguez 2014, p. 15). According to Acevedo-Rodriguez (2014, p. 2), the predominant vegetation type are grasslands dominated by guinea grass, which are maintained by human-induced fires and grazing animals.

The area of Peñones de Melones in Cabo Rojo is the only historical site for which the Service has strong evidence that *Eugenia woodburyana* was extirpated. In 1996, an estimate of about 20 individuals of *E. woodburyana* was provided for this area (Breckon 1996, unpublished data). Approximately 80 percent of the suitable habitat for this species in Peñones de Melones has been impacted by residential and tourist development, and by agricultural practices such as livestock grazing (USFWS 2017, p. 18). These practices have resulted in habitat modification and degradation, soil erosion, and the extirpation of *E. woodburyana*. Only about 20 percent of the Peñones de Melones area remains in secondary forest, and the area is under potential development pressure from two projects: Bahía de Campomar and Monte Carlo Resort-Boquerón Bay Villas (USFWS 2017, p. 18). These two projects could affect approximately 510 acres (206.4 ha) of suitable habitat that could harbor undetected *E. woodburyana* individuals. Both projects were proposed more than 10 years ago and have not been developed; however, we have no information indicating that development plans were abandoned.

Human-induced fires have been documented in *Eugenia 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, 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).

Eugenia 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). For example, the lowlands and gentle slopes of Sierra Bermeja are subject to human-induced fires on a yearly basis, encroaching on *E. woodburyana* and other native vegetation in this habitat (Monsegur-Rivera 2009-2019, pers. obs.; Envirosurvey 2020, p. 46). 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*, encroaching suitable habitat of 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.

Fires also have occurred in *Eugenia woodburyana* habitat in Punta Cucharas, between the municipalities of Ponce and Peñuelas. Habitat disturbance due to urban

development and the expansion of highway PR 2 in this area has promoted the establishment of guinea grass, resulting in favorable conditions for the occurrence of human-induced fires in the proximity of *E. woodburyana* (Monsegur-Rivera 2011 and 2013, pers. obs.). Camp Santiago is another area where fires have been identified as a threat to *E. woodburyana* due to anthropogenic disturbance (Acevedo-Rodríguez 2014, p. 15), and fires occur in the proximity of *E. woodburyana* basically on a yearly basis (Monsegur-Rivera 2009-2018, pers. obs.).

At the GCF, *Eugenia 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.).

Nonnative plant species are another threat to *Eugenia woodburyana.* Some nonnative plants can be very aggressive and compete with native species for sunlight, nutrients, water, and ground cover (79 FR 53309, September 9, 2014). In fact, the impacts of invasive species are among the greatest threat to the persistence of native rare species and their habitat (Thomson 2005, p. 615). The exotic tree *Leucaena leucocephala* can remain as a dominant canopy species for at least 80 years (Wolfe 2009, p. 2). Other exotic species like guinea grass are known to colonize habitat and suppress native vegetation (Rojas-Sandoval and Meléndez-Ackerman 2013, p. 489). Both *L. leucocephala* and guinea grass are fire-adapted species that have widely colonized *Eugenia 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 *Eugenia woodburyana*, particularly to those populations extending into private lands where habitat modifications and human-induced fires commonly occur.

In summary, at present the *Eugenia 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 part of the individuals occur either in 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, and 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 (*i.e.,* 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.

In the final listing rule, we identified the inadequacy of existing regulatory mechanisms (Factor D) as one of the factors affecting the continued existence of *Eugenia 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. Thus, Federal listing assured the addition of *E. woodburyana* as endangered to the Commonwealth's list of protected species (DRNA 2004, p. 52).

Presently, *Eugenia woodburyana* is legally protected under Commonwealth's Law No. 241-1999 (12 L.P.R.A. Sec. 107), 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 and Regulation 6766 extend to private lands.

As for the individuals found at the GCF, this area is protected under Law No. 133-1975 (12 L.P.R.A. Sec. 191), known as *Ley de Bosques de Puerto Rico* (Puerto Rico Forests' Law), as amended in 2000 (12 L.P.R.A. Sec. 191b). Section 8(a) of this law prohibits cutting, killing, destroying, uprooting, extracting, or in any way hurting any tree or vegetation within a Commonwealth forest (12 L.P.R.A. Sec. 191f). 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. Collection of plants is prohibited per 50 CFR 27.51 as well as per the Endangered Species Act. Additionally, the comprehensive conservation plans for LCNWR and CRNWR include measures for the protection and recovery of threatened and endangered species, including *Eugenia woodburyana*, within these Refuges (USFWS 2011a, p. 35; USFWS 2011b, p. 47).

Although there are legal mechanisms in place for the protection of *Eugenia 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 knowledge of the natural 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). In such cases, 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 on two refuges. In addition, the Commonwealth of Puerto Rico legally protects *Eugenia woodburyana* as an endangered species, including protections to its habitat, through Commonwealth Law No. 241 and Regulation 6766. If *E. woodburyana* is reclassified, 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 like 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 largely in conservation land, so effects due to inadequacy of regulatory mechanisms has been reduced. However, the occurrences of this species on private land continue to need enforcement, attention, and increased outreach to explain its importance.

At the time of listing, the Service considered small population size (Factor E) as a threat affecting the continued survival of *Eugenia woodburyana* (59 FR 46715, September 9, 1994) based on 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 reflects 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 (Factor E)

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 most recently, 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 among others (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 *Eugenia woodburyana* may be severely impacted by hurricanes, even 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, *Eugenia woodburyana* is adapted to tropical storms and the prevailing environmental conditions. However, the reduced number of populations, and the small numbers of individuals in some populations (*e.g.,* Camp Santiago and Montes de Barinas), make the species more 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, as the 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 *Eugenia woodburyana*, particularly in Sierra Bermeja, GCF, Punta Cucharas, and Almácigo Bajo (Morales-Pérez 2013, pp. 5 and 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, Envirosurvey (2020, p. 51) observed that runoff and erosion exposed the roots of *E. woodburyana* in Sierra Bermeja (Envirosurvey, 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 (O. Monsegur-Rivera and R. González, 2011, 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 shares 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 2011, 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.

Effects of Climate Change (Factor E)

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 arises from changes in environmental conditions associated with various aspects of climate change. Based on what it is known about the distribution of *Eugenia 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, hence populations expansion.

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 (Khalyani et al.

2016, pp. 267 and 279-280). These scenarios are generally comparable and span the more recent representative concentration pathways (RCP) scenarios from RCP4.5 (B1) to RCP8.5 (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 (Khalyani et al. 2016, p. 280).

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 (Khalyani et al. 2016, p. 275). By mid-21st century, Puerto Rico is predicted to be subject to a decrease in rainfall, along with increase drought intensity (Khalyani et al. 2016 p. 265, U.S. Global Change Research Program (USGCRP) 2018, 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 *Eugenia woodburyana* occurs, has experienced negative trends in annual rainfall (PRCC 2013, p. 7). Downscaled general circulation models (GCMs) developed by 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 extend of the species ability to redistribute will depend on their dispersal capability and forest connectivity (Khalyani et al. 2019, p. 11). Subtropical dry forests are already subject to water deficit for ten 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, 20:820). For example, droughts may compromise seedling recruitment as it may reduce seed viability and result in increased 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 moister 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, hence reducing the recruitment of *Eugenia 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.; table 1), 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, thus changing the microhabitat conditions and the moisture retention of the habitat, which are the natural conditions in which *E. woodburyana* evolved. For example, the populations of *E. woodburyana* at El Conuco that are located on the south-facing slope and more disturbed

sites, show basically no recruitment when compared to the individuals of the same populations located on the north-facing slopes, which is 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, 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 get established 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 *Eugenia woodburyana* habitat after a disturbance, increasing fire propensity and altering microclimate and nutrient cycling of the habitat on which this species 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 and 12). In general, the increasing hurricane intensity and frequency, coupled with *E. woodburyana* showing reduced populations, low number of individuals in most populations, low recruitment rate, and habitat degradation and fragmentation, is 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 *Eugenia woodburyana* and its habitat. Some general patterns associated with forest ecosystems in Puerto Rico (PRCC 2013, p. 14), and that can be

reflected on *E. woodburyana* are as follows: increased seasonality in precipitation and decreased soil moisture availability will alter flowering and fruiting patterns, affecting seedlings germination and survival, which will result in changes in forest's species composition, structure, and ecological functions. Also, an increment in intense storms will increase disturbance, hence, will cause changes in plant successional direction 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 sound long-term monitoring of known *Eugenia woodburyana* populations is needed to determine whether this species will have the ability to cope with the stressors indicated above and adapt to such changes.

In summary, the limited distribution and low number of individuals were considered a threat to *Eugenia 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 *Eugenia woodburyana*. Hurricane María caused defoliation and uprooting of *E. woodburyana* individuals at the CRNWR (Monsegur-Rivera 2017, pers. obs.). 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 *Eugenia 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, 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 and 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.

Overall Summary of Factors Affecting Eugenia woodburyana

We have carefully assessed the best scientific and commercial information available regarding the threats faced by *Eugenia woodburyana* in developing this proposed 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 its 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 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 (*i.e.,* 3Rs). *Eugenia woodburyana* has demonstrated to be resilient to both natural and anthropogenic disturbances. However, although adult individuals have overcome stochastic events such as droughts, seedlings are 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 *Eugenia woodburyana* populations show some degree of natural recruitment. The observed resiliency of the species may have been achieved by the availability of suitable habitat where some of the subpopulations are found, which have allowed some recruitment. Thus, in order to maintain and improve such resiliency, habitat protection and enhancement to increase connectivity between subpopulations are important to

maximize the likelihood of crosspollination and gene flow, and to increase fruit production, viable seeds, and the chances of natural recruitment. In addition, in order to secure the long-term resiliency of *E. woodburyana*, remaining small and isolated populations (*i.e.,* Monte Barinas, Punta Cucharas, and Camp Santiago) need to be enhanced and protected.

In terms of the representation of *Eugenia woodburyana*, we have no data on its genetic variability. 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. However, although the *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 a result of the connectivity among subpopulations in these two areas. The remaining four populations are isolated, with only a very few individuals and lack of recruitment, except for the Almácigo Bajo population. However, 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 *Eugenia 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 individual), Punta Cucharas (30 individuals), and Camp Santiago (1 individual)—are very small with no current evidence of natural recruitment, making them more vulnerable to catastrophic and stochastic 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 *Eugenia 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 can reasonably determine the identified threats and the species response to those threats is likely. The foreseeable future for the individual threats vary. Projections out to the year 2100 show increases in temperature and decreases in precipitation (Khalyani *et al.* 2016, pp. 274–275). However, divergence in temperature

and precipitation projections increases dramatically after mid-century, depending on the scenario (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, the 30-years foreseeable future we are proposing, would account for the effects of predicted changes in temperature, life zone's shifting, and increasing droughts. Additionally, the species has been listed for over 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, and thus 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 crosspollination, 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 the continued collaborating 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 will promote habitat connectivity until such time as we find it no longer requires protections under the Act.

Determination of *Eugenia woodburyana* 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 in 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 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 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, the known range of *Eugenia woodburyana* consisted of 45 individuals distributed along 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 sub-populations. 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, and Commonwealth laws and regulations has reduced the unauthorized take, 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.

However, 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 *Eugenia 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 *Eugenia woodburyana* from inadequacy of existing regulatory mechanisms that occurred prior to listing by the Commonwealth of Puerto Rico has been reduced and limited distribution is no longer impacting *E. woodburyana*. In summary, there continues to be concern about present or threatened destruction, modification, or curtailment of its 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 its continued existence (specifically, invasive species, human-induced fires, droughts, hurricanes, landslides, and sediment runoff) throughout the range of *E. woodburyana*, 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 over collection, and disease and predation. Still, none of these is an imminent threat or at 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*, 2020 WL 437289 (D.D.C. Jan. 28, 2020) (*Everson*), vacated the aspect of the 2014 Significant Portion of its Range Policy that provided that the Services do 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 *Everson*, 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 *Eugenia woodburyana,* we choose to 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 *Eugenia woodburyana,* we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale. 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, lands slides and sediment runoff; and the effects of climate change (*e.g.,* prolonged droughts and expected shits 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 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 as suggested by downscaled models developed for Puerto Rico, particularly by generalized changes in precipitation and drought conditions, and shifting of life zones in the Island. In fact, climate change is expected to result in more intense hurricanes and extended periods of droughts that can be exacerbated by a reduced number of populations, low number of individuals in most populations, and habitat degradation and fragmentation.

Narrow endemics are generally more likely to experience the same kinds and levels of threats in all parts of their ranges, and thus, no portion would likely have an increased level of threats and, accordingly, a different status. Here, we found no concentration of threats in any portion of *E. woodburyana*'s range at a biologically

meaningful scale. 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*, No. 16-cv-01165-JCS, 2018 WL 4053447 (N.D. Cal. Aug. 24, 2018), and *Center for Biological Diversity v. Jewell*, 248 F. Supp. 3d , 946, 959 (D. Ariz. 2017).

Determination of Status

Our review of the best available scientific and commercial information indicates that the *Eugenia woodburyana* meets the definition of a threatened species. Therefore, we propose to reclassify *E. woodburyana* as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. The Act encourages cooperation with the States and requires that recovery actions be implemented for all listed species. The protections 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. Subsection 4(f) of the Act requires 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 ecosystem.

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 remains endangered, or 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. All planning documents can be found on our website (http://www.fws.gov/endangered) or from our Caribbean Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Implementation of recovery actions generally requires the participation of a broad range of partners, including other Federal agencies, States (in this case, the Commonwealth of Puerto Rico), Tribes, nongovernmental organizations, businesses, and private landowners. Examples of recovery actions include habitat restoration (*e.g.,* restoration of native vegetation), research, captive 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 (like Commonwealth-owned forests). To achieve recovery of these species requires

cooperative conservation efforts on private, State, and Tribal lands where appropriate. Funding for recovery actions could become available from a variety of sources, including Federal budgets, Commonwealth programs, and cost share grants from non-Federal landowners, the academic community, and nongovernmental organizations. We invite you to submit any new information of 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.

Proposed 4(d) Rule

Background

Section 4(d) of the Act contains two sentences. The first sentence states that the "Secretary shall issue such regulations as he 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 him with regard to the permitted activities for those species. He may, for example, permit taking, but not importation of such species, or he 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 4(d) the Service has developed a proposed rule that is designed to address *Eugenia 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 under **Overall Summary of Factors Affecting *Eugenia woodburyana***, the Service has concluded that the *Eugenia woodburyana* is at risk of extinction within the foreseeable future primarily due to habitat destruction and modification, particularly by urban development, and grazing by cattle, horses, and goats; human-induced fires; and invasive species. Additionally, other natural or manmade factors like hurricanes, lands slides, sediment runoff, and the effects of climate change can cause the species to be in the risk of extinction in the foreseeable future. The provisions of this proposed 4(d) rule would promote the conservation of the *E. woodburyana* by encouraging the conservation of the habitat considering land use and the species' needs. The provisions of this proposed rule are one of many tools that the Service will use to promote the conservation of *E. woodburyana*. This proposed 4(d) rule would apply only if and when the Service makes final the listing of *E. woodburyana* as a threatened species.

Provisions of the Proposed 4(d) Rule

This proposed 4(d) rule would provide for the conservation of the *Eugenia woodburyana* by prohibiting the following activities, except as otherwise authorized or permitted: importing or exporting; certain acts related to removing, damaging, and destroying; delivering, receiving, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; selling or offering for sale in interstate or

foreign commerce; or collecting plant material (seeds, seedlings, propagules, or cuttings) and natural individuals or those planted to enhance the status of the species in the wild.

As discussed under the **Overall Summary of Factors Affecting *Eugenia woodburyana*** (above), 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: 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.

We may issue permits to carry out otherwise prohibited activities, including those described above, involving threatened plants under certain circumstances. Regulations governing permits are codified at 50 CFR 17.72. With regard to threatened plants, a permit may be issued for the following purposes: 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 of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

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 listing on proposed and ongoing activities with the range of listed species. Based on the best available information, the following actions are unlikely to result in a violation of section 9, if these activities are carried out in accordance with existing regulations and permit requirements (this list is not comprehensive): (1) engaging in sustainable agricultural and grazing practices; (2) conducting low-impact residential development (*e.g.,* single-family units); and (3) minimizing areas of rights of way for infrastructure development projects. Questions regarding whether specific activities would constitute a violation of section 9 of the Act should be directed to the Southeast Region Recovery Permit Coordinator at (404) 679–7097, or to the Caribbean Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

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 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 *Eugenia 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 would 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 would 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 proposed 4(d) rule would 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 the *Eugenia woodburyana*. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between Federal agencies and the Service. We ask the public, particularly State agencies and other interested stakeholders that may be affected by the proposed 4(d) rule, to provide comments and suggestions regarding additional guidance and methods that the Service could provide or use, respectively, to streamline the implementation of this proposed 4(d) rule (see **Information Requested**, above).

Effects of This Proposed Rule

This proposed rule, if made final, would revise 50 CFR 17.12(h) to reclassify *Eugenia woodburyana* from endangered to threatened on the Federal List of Endangered and Threatened Plants. It would also recognize 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 *Eugenia woodburyana* will continue to be implemented as outlined in the recovery plan for this plant (USFWS 1998). 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 Puerto Rico Department of Natural and Environmental Resources 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

Clarity of this Proposed Rule

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

(a) Be logically organized;

(b) Use the active voice to address readers directly;

(c) Use clear language rather than jargon;

(d) Be divided into short sections and sentences; and

(e) Use lists and tables wherever possible.

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

National Environmental Policy Act

We have determined that we do not need to prepare an environmental assessment or environmental impact statement, as defined in the National Environmental Policy Act

of 1969 (42 U.S.C. 4321 *et seq.*), in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act. We published a notice outlining our reasons for this determination in the *Federal Register* on October 25, 1983 (48 FR 49244).

Government-to-Government Relationship with Tribes

In accordance with the President's memorandum of April 29, 1994, "Government-to-Government Relations with Native American Tribal Governments" (59 FR 22951), Executive Order 13175, and the Department of 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. We have determined that there are no tribal interests affected by this proposal.

References Cited

A complete list of references cited is available on *http://www.regulations.gov* under Docket Number FWS–R4–ES–2019–0070.

Authors

The primary authors of this document 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, Reporting and recordkeeping requirements, Transportation.

Proposed Regulation Promulgation

Accordingly, we propose to 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; [*FEDERAL REGISTER* CITATION OF FINAL RULE]; 50 CFR 17.73(e).[4d]
* * * * * * *				

* * * * *

3. Revise § 17.73 to read as follows:

§ 17.73 Special rules—flowering plants.

(a) through (d) [Reserved]

(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 provided in § 17.61(b).

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

(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 at section 9(a)(2)(B) of the Act.

(iv) Engage in interstate or foreign commerce in the course of commercial activity, as provided in § 17.61(d).

(v) Sell or offer for sale in interstate or foreign commerce, as provided in § 17.61(e).

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

(i) Persons that have been issued permits in accordance with the provisions set forth in § 17.72 may conduct activities as authorized by the permit.

(ii) Any employee or agent of the Service or of a State or Territorial Conservation Agency that is operating in 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) Entities 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.

Aurelia Skipwith,

Director,

U.S. Fish and Wildlife Service

[FR Doc. 2020-20300 Filed: 10/20/2020 8:45 am; Publication Date: 10/21/2020]