ability requirements as set forth in § 10.304(c) of this subchapter;

(ii) The examining medical practitioner documents that the individual has a condition that does not meet the general medical exam requirements described in § 10.304(a), the vision requirements described in § 10.305, or the hearing requirements described in § 10.306 of this subchapter;

(iii) The examining medical practitioner documents on a CG–719K that the individual is not recommended for a medical certificate or needs further review by the Coast Guard as set forth in § 10.301(a) of this subchapter; or

(iv) If the Coast Guard requests the results of an examination, they must be submitted no later than 30 calendar days after the date of the request.

* * * * *

(d) A master or mate may not serve as a pilot on a vessel 1,600 GRT or more under § 15.812 of this subchapter if the person does not meet the physical examination requirements provided in paragraph (b) of this section.

PART 15—MANNING REQUIREMENTS

■ 5. The authority citation for part 15 is revised to read as follows:

Authority: 46 U.S.C. 2101, 2103, 3306, 3703, 8101, 8102, 8103, 8104, 8105, 8301, 8304, 8502, 8503, 8701, 8702, 8901, 8902, 8903, 8904, 8905(b), 8906 and 9102; and DHS Delegation No. 00170.1, Revision No. 01.2.

§ 15.401 [Amended]

■ 6. Amend § 15.401 by:

■ a. In paragraph (a), remove in the first sentence the words, ''license, certificate of registry, Merchant Mariner's Document (MMD),'' and remove from the second sentence the words, ''license, certificate of registry, MMD, or'';

■ b. In paragraph (c)(1), remove the words, ''After January 1, 2017, two'' and add, in its place the word, ''Two'';

■ c. Remove paragraph (c)(2) and redesignate paragraph (c)(3) as paragraph (c)(2); and

■ d. In paragraphs (d) and (e), remove wherever they appear the words, ''MMD or''.

■ 7. In § 15.812, amend Table 1 to § 15.812(e)(1), by revising the second row to read as follows:

§ 15.812 Pilots.

* * * * *

TABLE 1 TO § 15.812(e)(1)—QUICK REFERENCE TABLE FOR FEDERAL PILOTAGE REQUIREMENTS FOR U.S.-INSPECTED, SELF-PROPELLED VESSELS, NOT SAILING ON REGISTER

	Designated areas of pilotage waters (routes for which First-Class Pilot's licenses or MMC officer endorsements are issued)	Non-designated areas of pilotage waters (between the 3-mile line and the start of traditional pilotage routes)
* *	* * *	* *
Inspected self-propelled vessels not more than 1,600 GRT, authorized by their COI to proceed beyond the Boundary Line, or operating on the Great Lakes.	First-Class Pilot, *or* Master or Mate may serve as pilot if he or she— 1. Is at least 21 years old; 2. Maintains current knowledge of the waters to be navigated; and[1] 3. Has four roundtrips over the route.[2]	Master or Mate may serve as pilot if he or she— 1. Is at least 21 years old; and 2. Maintains current knowledge of the waters to be navigated.[1]
* *	* * *	* *

[1] One roundtrip within the past 60 months.
[2] If the route is to be traversed during darkness, one of the four roundtrips must be made during darkness.

* * * * *

Dated: October 21, 2022.

W.R. Arguin,

Rear Admiral, U.S. Coast Guard, Assistant Commandant for Prevention Policy.

[FR Doc. 2022–23339 Filed 11–3–22; 8:45 am]

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DEPARTMENT OF THE INTERIOR

Fish and Wildlife Service

50 CFR Part 17

[Docket No. FWS–R4–ES–2020–0059; FF09E22000 FXES1113090FEDR 223]

RIN 1018–BE56

Endangered and Threatened Wildlife and Plants; Reclassification of Palo de Rosa From Endangered to Threatened With a Section 4(d) Rule

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: We, the U.S. Fish and Wildlife Service (Service), are reclassifying the palo de rosa (*Ottoschulzia rhodoxylon*) from endangered to threatened under the Endangered Species Act of 1973, as amended (Act). This action is based on our evaluation of the best available scientific and commercial information, which indicates that the species' status has improved such that it is not currently in danger of extinction throughout all or a significant portion of its range, but it is still likely to become so in the foreseeable future. We are also finalizing a rule under section 4(d) of the Act that provides for the conservation of the palo de rosa.

DATES: This rule is effective December 7, 2022.

ADDRESSES: This final rule, supporting documents we used in preparing this rule, and public comments we received are available on the internet at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0059.

FOR FURTHER INFORMATION CONTACT: Edwin Muñiz, Field Supervisor, U.S. Fish and Wildlife Service, Caribbean Ecological Services Field Office, P.O. Box 491, Boquerón, PR 00622; telephone (787) 851–7297. Individuals in the United States who are deaf, deafblind, hard of hearing, or have a speech disability may dial 711 (TTY, TDD, or TeleBraille) to access telecommunications relay services. Individuals outside the United States should use the relay services offered within their country to make international calls to the point-of-contact in the United States.

SUPPLEMENTARY INFORMATION:

Executive Summary

Why we need to publish a rule. Under the Act, a species warrants reclassification from endangered to threatened if it no longer meets the definition of an endangered species (in danger of extinction throughout all or a significant portion of its range). The palo de rosa was listed as endangered

May 10, 1990 (55 FR 13488, April 10, 1990), and we are finalizing our proposed reclassification of the palo de rosa as threatened. We have determined the palo de rosa does not meet the Act's definition of an endangered species but it does meet the definition of a threatened species (likely to become an endangered species throughout all or a significant portion of its range). Reclassifying a species as a threatened species can be completed only by issuing a rule through the Administrative Procedure Act rulemaking process (5 U.S.C. 551 *et seq.*).

What this document does. This rule revises part 17 of title 50 of the Code of Federal Regulations (50 CFR part 17) to reclassify the palo de rosa from an endangered to a threatened species on the Federal List of Endangered and Threatened Plants and establish provisions under section 4(d) of the Act that are necessary and advisable to provide for the conservation of this species (a ''4(d) rule'').

The basis for our action. Under the Act, we may determine that a species is an endangered species or a threatened species because of any 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. Based on the status review, the current threats analysis, and evaluation of conservation measures discussed in this rule, we conclude that the palo de rosa no longer meets the Act's definition of an endangered species and should be reclassified to a threatened species. The species 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. The palo de rosa is affected by the following current and ongoing threats: habitat loss, degradation, and fragmentation from urban development; agricultural practices and rights-of-way maintenance coupled with habitat intrusion by exotics; other natural or manmade factors, such as hurricanes; and the species' slow growth, limited dispersal, and low recruitment.

We are promulgating a section 4(d) rule. We are adopting the Act's section 9(a)(2) prohibitions as a means to provide protective mechanisms to the palo de rosa. We include specific tailored exceptions to these prohibitions to allow certain activities covered by a permit or actions with seeds of cultivated specimens accompanied by a statement of ''cultivated origin.''

Abbreviations and Acronyms Used

For the convenience of the reader, the following list explains abbreviations and acronyms used in this document:

CCF = Cambalache Commonwealth Forest
GCF = Guánica Commonwealth Forest
GuCF = Guajataca Commonwealth Forest
IPCC = Intergovernmental Panel on Climate Change
LCNWR = Laguna Cartegena National Wildlife Refuge
MAPR = herbarium of the Department of Biology at the University of Puerto Rico at Mayaguez
PLN = Para La Naturaleza, Inc.
PRDNER = Puerto Rico Department of Natural and Environmental Resources
PREPA = Puerto Rico Energy and Power Authority
PRHTA = Puerto Rico Highway and Transportation Authority
RACF = Río Abajo Commonwealth Forest
SCF = Susúa Commonwealth Forest
UPR = herbarium at the Rio Piedras Botanical Garden, of the University of Puerto Rico
UPRRP = herbarium of the University of Puerto Rico at Rio Piedras

Previous Federal Actions

Please refer to the proposed rule to reclassify the palo de rosa published on July 14, 2021 (86 FR 37091), for a detailed description of previous Federal actions concerning this species.

Summary of Comments and Recommendations

In the proposed rule published on July 14, 2021 (86 FR 37091), we requested that all interested parties submit written comments on the proposal by September 13, 2021. We also contacted appropriate Federal and State agencies, scientific experts and organizations, and other interested parties and invited them to comment on the proposal. Newspaper notices announcing the proposed rule and inviting general public comment were published in Spanish and English in the El Nuevo Dia newspaper. We did not receive any requests for a public hearing or public comments on the proposed rule.

Peer Review Comments

In accordance with our policy, ''Notice of Interagency Cooperative Policy for Peer Review in Endangered Species Act Activities,'' which was published on July 1, 1994 (59 FR 34270), and our August 22, 2016, Director's Memorandum ''Peer Review Process,'' we sought the expert opinion of five appropriate and independent specialists regarding scientific data and interpretations contained in the proposed rule and received no responses. We also requested review from our Federal and Territorial partners and received no comments.

Summary of Changes From the Proposed Rule

We have made minor typographical or stylistic changes and corrections, but no substantive changes, to the July 14, 2021, proposed rule (86 FR 37091).

I. Final Reclassification Determination

Species Information

A thorough review of the taxonomy, life history, ecology, and overall viability of the palo de rosa was presented in the 5-year review (USFWS 2017, entire) and the proposed rule published July 14, 2021 (86 FR 37091). Below, we present a brief summary of the biological and distributional information for the palo de rosa. Please refer to the 5-year review and proposed rule for more detailed information.

Taxonomy and Species Description

The palo de rosa is a small evergreen tree that may reach up to 15 meters (m) (49 feet (ft)) in height and is a member of the Icacinaceae family (USFWS 1994, p. 1). The branches are smooth and dark gray with ovate, round, or elliptic leaves (Liogier 1994, p. 41). Flowers are solitary or grouped in a three- to five-flower cluster, and the small fruit is smooth with a thin outer layer that turns dark purple when ripe. The seed is about 2 centimeters (cm) (0.8 inches (in)) long (Liogier 1994, p. 41; Santiago Valentín and Viruet-Oquendo 2013, p. 62). Palo de rosa trees may be difficult to identify based on sterile material.

Reproductive Biology

When the palo de rosa recovery plan was written, information about the flowering and fruiting pattern was limited due to the species not being well-studied and the infrequent observation of reproductive events, although flowering was observed in May and July 1993 (USFWS 1994, p. 5). The species bears hermaphrodite flowers, flowers for a short period at the beginning of the rainy season and develops fruits subsequently until November (Breckon and Kolterman 1993, p. 15; Santiago-Valentín and Viruet-Oquendo 2013, p. 62). Few buds and flowers occur from April to May with an explosive flowering in June coinciding with the beginning of the rainy season in May. Herbarium specimens demonstrated flowering and fruiting between May and July (Santiago-Valentin and Viruet-Oquendo 2013, p. 62). Flower and fruit production are documented in

individuals with diameters at breast height greater than 5 in (12.7 cm). Despite the high number of adult individuals reported, only a few reach that stem size (Breckon and Kolterman 1993, p. 15; USFWS 2009, unpubl. data).

The cluster distribution of seedlings under the parent trees indicates that seeds are dispersed by gravity. Subpopulations in northern Puerto Rico are located on top of limestone hills indicating that some disperser (*e.g.,* animal vector) took them there in the past although no species has been observed acting as a seed disperser (Breckon and Kolterman 1993, p. 15); USFWS 2017, p. 12). Dispersal by water has been hypothesized for the subpopulations in the southern coast located at the bottom of small drainages. However, establishment of seedlings in these drainages is low likely because seeds are buried by sediments and small plants are uprooted by high flows (Monsegur-Rivera 2007, pers. obs.).

Due to the infrequency of fruit production, germination experiments have been limited. Attempts to germinate seeds from the Dorado (Mogotes de Higuillar) population (northern Puerto Rico) have proven to be difficult (10 percent success) as the majority of seeds were attacked by insects (Coleoptera) (Ruiz Lebrón 2002, p. 2). The species also has been germinated by PRDNER and the University of Puerto Rico with a 50 percent germination success (Caraballo 2009, pers. comm.). Propagation of the species is feasible and may be used in palo de rosa recovery efforts. Palo de rosa saplings have been planted in the Susúa and Guajataca Commonwealth Forests as well as on lands within Fort Buchanan, which is owned by the U.S. Army. Palo de rosa is not known to reproduce vegetatively although multiple stems may regrow from a tree that has been cut.

Distribution, Abundance, and Habitat

The palo de rosa was described by Ignatius Urban (1908) from material collected by Leopold Krug near the municipality of Mayagüez in 1876 (Liogier 1994, p. 42). Based on the description of the type locality, the collection site may correspond to an area known as Cerro Las Mesas. At the time of listing, the palo de rosa was known from nine individuals in three areas and considered endemic to Hispaniola and Puerto Rico (55 FR 13488, April 10, 1990, p. 13489). Subpopulations and populations were not defined or identified at the time of listing. The species was known from the limestone hills near the municipality of Bayamón in northern Puerto Rico, several sites in the Guánica Commonwealth Forest (GCF) in southwest Puerto Rico, and one individual on the southern slopes of the Maricao Commonwealth Forest (55 FR 13488, April 10, 1990, p. 13489).

At the time the recovery plan was written in 1994, there was little information on the species' distribution, ecology, and reproductive biology; therefore, in the recovery plan, species experts considered each subpopulation or cluster of individuals as a population. The recovery plan describes additional individuals observed as a result of increased survey efforts in suitable habitat. In the 1994 recovery plan, we estimated 200 palo de rosa individuals in 16 populations (now defined as subpopulations and noted with ''(RP)'' in the table in the proposed rule). An additional population (now considered a subpopulation) was reported in 1996, increasing the total number of trees to 207 adult individuals (Breckon and Kolterman 1996, p. 4).

The current understanding of the palo de rosa's biological and ecological requirements has led us to define a population as a geographical area with unique features (substrate or climate) and continuous forested habitat that provides for genetic exchange among subpopulations (*i.e.,* cross-pollination) where the species occurs. We further considered natural barriers (*e.g.,* mountain ranges and river valleys) and extensive gaps of forested habitat to discern the boundaries of these broader populations because connectivity between subpopulations is critical to support a functional palo de rosa population due to the cross-pollination requirement of the species. Furthermore, the flowering of the palo de rosa is sporadic and not synchronized, thus prompting us to further define a population as groups of subpopulations that show connectivity to secure cross-pollination. Based on the above information, we have determined the palo de rosa to be distributed across Puerto Rico in 14 populations composed of 66 subpopulations containing 1,144 individuals (not including seedlings). Following this approach, 8 of the 14 current populations (containing 47 subpopulations with approximately 804 individuals) occur in the geographical areas associated with the 16 populations (now defined as subpopulations) included in the Service's 1994 recovery plan. Since 1994, we have identified 6 additional populations (as currently defined) composed of 19 subpopulations (342 individuals) ranging in size from 5 to 124 individuals in areas associated with remnants of forested habitat suitable for the species. Thus, these additional occurrences are key in understanding the current condition of the species.

Currently, the number of palo de rosa individuals has increased from 9 individuals on protected lands at the time of listing to 407 individuals (representing 36 percent of known individuals or 32 percent of subpopulations) occurring in areas managed for conservation (*e.g.,* Commonwealth Forest and Federal lands). An additional 396 individuals (38 percent of subpopulations) occur in areas subject to little habitat modification due to the steep topography in the northern karst region of Puerto Rico. The remaining 30 percent of the subpopulations (containing approximately 341 individuals) occur within areas severely encroached upon by and vulnerable to urban or infrastructure development. However, the resiliency of all subpopulations depends on interaction (cross-pollination) with nearby subpopulations. Despite the increase in the number of known subpopulations and individuals, there are no records of recruited individuals reaching reproductive size in the past three decades. We also do not have any records of recent dispersal and range expansion of the species. The following discussion provides the most updated information on these populations, and their respective geographical areas. Please refer to our July 14, 2021, proposed rule (86 FR 37097–37100) for a table of the currently known natural populations, subpopulations, and numbers of adult individuals of palo de rosa in Puerto Rico.

The distribution of the palo de rosa extends along the southern coast of Puerto Rico from the municipality of Cabo Rojo east to the municipality of Guayanilla in five geographical areas or populations: (1) Guánica Commonwealth Forest (GCF), (2) Montes de Barinas, (3) Guayanilla-Peñuelas, (4) Susúa Commonwealth Forest (SCF), and (5) Cerro Las Mesas-Sierra Bermeja. In addition, the palo de rosa extends along the northern coast of Puerto Rico from the municipality of Aguadilla east to the municipality of Fajardo in the following nine areas or populations: (1) Aguadilla-Quebradillas, (2) Camuy-Hatillo, (3) Arecibo, (4) Utuado-Ciales, (5) Arecibo-Vega Baja, (6) Dorado, (7) La Virgencita, (8) Mogotes de Nevares, and (9) San Juan-Fajardo (USFWS 2017, p. 11).

The range of the species extends to Hispaniola (Dominican Republic and Haiti) (Acevedo-Rodríguez and Strong, 2012, p. 369; Axelrod 2011, p. 184);

however, there is little information on the population structure and status of the palo de rosa in these countries, and information is limited to scattered herbarium collections. In the Dominican Republic, the species occurs in Provincia (Province) de La Altagracia, Provincia de Samaná, Provincia de Puerto Plata, Provincia de Pedernales, and Provincia de San Cristobal (Jardín Botánico Santo Domingo (JBSD), unpubl. data). On the northern coast of Haiti, the palo de rosa has been recorded at ''Massif du Nord'' along a dry river (JBSD, unpubl. data). However, these herbarium specimens provide no data on the subpopulation or population abundance or number of associated individuals. The palo de rosa is categorized as critically endangered according to the Red List of Vascular Flora in the Dominican Republic (*Lista Roja de la Flora Vascular en República Dominicana*), an assessment of the conservation status of all vascular plants in the Dominican Republic as determined by the Ministry of Higher Education Science and Technology Ministry (Garcia et al. 2016, p. 4).

The palo de rosa occurs in variable habitats but is dependent on the specific microhabitat conditions. On dry limestone forest like the GCF, the species occurs at the bottom of drainages that provide moisture, whereas at the SCF, the palo de rosa occurs along the borders of rivers. The subpopulations along the northern karst of Puerto Rico are found on the top of limestone hills, possibly because those areas have no agricultural value, and so were not impacted by conversion to agricultural lands. Such variability in habitats indicates the species' current fragmented distribution and lack of connectivity between populations are the result of earlier land-clearing and habitat modification. Information from specimens deposited at multiple herbaria (*i.e.,* New York Botanical Garden, Smithsonian Institution, UPR, UPRRP, and MAPR) suggests the palo de rosa was originally more common and widespread throughout Puerto Rico, even extending to the coastal lowlands of Puerto Rico, including dune ecosystems. Our July 14, 2021, proposed rule (86 FR 37097–37100) includes additional details and information on the current abundance, distribution, and habitat of palo de rosa populations in Puerto Rico.

Recruitment and Population Structure

At least 25 of the 66 subpopulations show evidence of fruit production and seedling or sapling recruitment (USFWS 2017, pp. 8, 11–12). Fruit production and seed germination have been documented in several subpopulations (Monsegur-Rivera 2016, pers. obs.). However, individual palo de rosa saplings and trees grow extremely slowly, with an estimated height of less than 1 m (3.3 ft) after 20 years growth. Under natural conditions, palo de rosa individuals may require at least 40 years to reach a reproductive size, and the currently known subpopulations are experiencing slow recruitment (Monsegur-Rivera 2018, pers. obs.). Palo de rosa seeds are dispersed by gravity, limiting recruitment to the proximity of the parental tree. Thus, the species' potential to colonize further suitable habitat is limited and survival of clustered seedlings may be reduced due to closed canopy conditions and competition with the parental tree.

Population dynamics and survey assessments support the hypothesis that the palo de rosa is a late-successional species whose saplings may remain dormant under closed canopy conditions until there is some natural disturbance that provides favorable conditions for the development of the saplings. Thus, the species may require an open canopy to promote seedling growth and is adapted to natural disturbances such as hurricanes (Breckon and Kolterman 1996). Under this scenario, the natural populations show a slow natural recruitment that requires stable habitat conditions with a regime of natural disturbance (*i.e.,* tropical storms or hurricanes). Although natural disturbances (e.g.*,* tropical storms or hurricanes) can promote the recruitment of saplings into adulthood, the palo de rosa population should be composed of different size classes in order to be able to withstand such stochastic events.

Reproductive events (*i.e.,* flowering and fruiting) have been associated with bigger trees as observed in four subpopulations, where tree diameters reach 13–20.5 cm (5.1–8.1 in) and canopies are higher (at least 10 m) (32.8 ft) (Breckon et al.1992, p. 8; USFWS 2009, p. 4). For example, one large tree in the El Costillar-Río Guajataca subpopulation had an estimated 1,000 seedlings under 1 tree with an almost 90 percent survivorship of 156 monitored seedlings after 18 months (Breckon et al. 1992, p. 8). Further visits to this subpopulation indicate the survival of seedlings and saplings remains high with evidence of additional recruitment (Monsegur-Rivera 2007, 2012, and 2014, pers. obs.).

Recruitment may be intermittent in some subpopulations. For example, a subpopulation with no seedling survival following a fruiting event in 2004 was noted to contain about 30 small saplings in the post-Hurricane María assessment in 2018, suggesting the subpopulation is slowly recruiting (USFWS 2018, p. 25). Since 2009, hundreds of seedlings have been recorded in the Fort Buchanan subpopulation (Monsegur-Rivera 2009–2020, pers. obs.). In 2018, at least 12 saplings ranging from 0.3–1.0 m (0.9–3.3 ft) were observed. Saplings this size can withstand seasonal drought stress, and individuals are likely to persist in the long term if the habitat remains unaltered. Cross-pollination between subpopulation maximizes the likelihood of fruit production and contributes to recruitment, which underscores the importance of conserving the species through a landscape approach.

Of the 26 subpopulations currently showing evidence of natural recruitment, 9 of the 26 occur in areas that are managed for conservation. The 9 subpopulations constitute 36 percent of subpopulations showing natural recruitment and contain nearly 300 individuals in total. There is no evidence of natural recruitment at this time for the remaining 40 subpopulations although the species' life history implies that recruitment may still occur in these subpopulations when a canopy opening is created and suitable conditions for recruitment are present. Forest cover in Puerto Rico has increased since the widespread deforestation in the 1930s–1950s (Marcano-Vega et al. 2015, p. 67), but the availability of suitable habitat prior to deforestation and habitat fragmentation implies the palo de rosa may have had greater abundance and wider distribution. Although current information on population structure indicates the species requires some open canopy areas to promote recruitment, widespread deforestation fragments habitat and creates edges (habitat transition zones). The possible long-term negative effects of habitat fragmentation and edge effect on subpopulations with recruitment adjacent to habitat disturbance are still unknown. Current observations from the 2018 post-hurricane assessment suggest subpopulations encroached by development or agriculture were negatively affected by weedy vegetation invading the habitat following Hurricane María (*e.g., Cayaponia americana* (bejuco de torero), *Dioscorea alata* (ñame), and *Thunbergia grandiflora* (pompeya). However, the extent of such impact remains uncertain, and further monitoring is needed. Such information highlights the effect of habitat fragmentation on the natural recruitment of the palo de rosa.

Recovery Criteria

Section 4(f) of the Act directs us to develop and implement recovery plans for the conservation and survival of endangered and threatened species unless we determine that such a plan will not promote the conservation of the species. Recovery plans must, to the maximum extent practicable, include objective, measurable criteria which, when met, would result in a determination, in accordance with the provisions of section 4 of the Act, that the species be removed from the list.

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

There are many paths to accomplishing recovery of a species, and recovery may be achieved without all criteria being fully met. For example, one or more criteria may be exceeded while other criteria may not yet be accomplished. In that instance, we may determine that the threats are minimized sufficiently and that the species is robust enough that it no longer meets the definition of an endangered or threatened species. In other cases, we may discover new recovery opportunities after having finalized the recovery. Parties seeking to conserve the species may use these opportunities instead of methods identified in the recovery plan. Likewise, we may learn new information about the species after we finalize the recovery plan. The new information may change the extent to which existing criteria are appropriate for identifying recovery of the species. The recovery of a species is a dynamic process requiring adaptive management that may or may not fully follow all of 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. The recovery plan for this species does not provide downlisting criteria (USFWS 1994, entire) but indicates the species could be considered for delisting when the following criteria are met: (1) Populations known to occur on privately owned land are placed under protective status; (2) an agreement between the Service and the U.S. Army concerning the protection of the species on their land (Fort Buchanan) has been prepared and implemented; and (3) mechanisms for the protection of the palo de rosa have been incorporated into management plans for Maricao, Guánica, Susúa, and Cambalache Commonwealth Forests. The plan also notes that, given the discovery of additional populations, priority should be given to enhancement and protection of existing populations in protected areas and on privately owned land (USFWS 1994, p. 13). At the time the recovery plan was written, only 200 individuals in 16 populations (currently defined as subpopulations) were known. In addition, the lack of recruitment in palo de rosa populations was not known to be a concern; therefore, recovery criteria primarily address protection of palo de rosa habitat. 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. Details regarding the delisting criteria and the degree to which they have been met are described in the proposed reclassification rule and have not changed.

Delisting criterion 1 has been partially met. At the time the recovery plan was written, 4 of 16 populations (now defined as subpopulations) occurred on private lands. Currently, of the 66 known palo de rosa subpopulations, 45 are located on private lands with 3 of these managed for conservation.

Federal and Territorial conservation efforts have resulted in habitat protections that benefit the Yauco Landfill palo de rosa subpopulation and maintain connectivity between subpopulations (PRDNER 2015b, p. 1). In addition, the PRDNER has increased the protected area in the GCF from the approximately 4,016 ha (9,923 ac) in 1996 to at least 4,400 ha (10,872 ac) (Monsegur 2009, p. 8). While delisting criterion 1 has been only partially met, with the identification of additional individuals, populations, and subpopulations, only 341 (29 percent) of the known 1,144 palo de rosa individuals occur on private lands with no protection. Currently, 407 individuals (representing 36 percent of known individuals or 32 percent of subpopulations) occur in areas managed for conservation.

Together with our partners, we have met delisting criterion 2 through an MOU specifying protection and management of the Fort Buchanan populations (U.S. Army, Fort Buchanan 2015, entire). Lastly, we determine delisting criterion 3 to be obsolete. Although species-specific management plans do not exist for Commonwealth forests, the natural reserves are managed for conservation by PRDNER as recommended by the Master Plan for the Commonwealth Forests of Puerto Rico (DNR 1976, entire). We continue working with PRDNER and other partners to monitor and survey suitable unexplored habitat for the palo de rosa, to develop sound conservation strategies, and to proactively identify priority areas for conservation.

In conclusion, the implementation of recovery actions, in addition to the identification of numerous additional individuals and subpopulations, have reduced the risk of extinction for the palo de rosa. Of the 1,144 adult palo de rosa individuals known, only 341 (29 percent) occur on private lands with no protection. Currently, 407 individuals (representing 36 percent of known individuals or 32 percent of subpopulations) occur in areas managed for conservation. Furthermore, a total of 396 individuals (38 percent of subpopulations) occur in areas subject to little habitat modification due to the steep topography in the norther karst region of Puerto Rico Although many individuals occur on protected lands, we have identified 20 subpopulations throughout Puerto Rico where habitat modification and fragmentation still can occur. Although Puerto Rico's laws and regulations protect the palo de rosa on both public and private lands and other protection mechanisms (*i.e.,* conservation easements) have been implemented, impacts to palo de rosa subpopulations may occur due to lack of enforcement, misidentification of the species, unsustainable agricultural practices, and unregulated activities (see Summary of Biological Status and Threats, below). Based on the biology of the palo de rosa and its dependence on cross-pollination, impacts that reduce connectivity between subpopulations may affect the breeding capacity of the species and, thus, its long-term recruitment and viability. The recovery of the palo de rosa will include collaboration and partnership efforts with PRDNER and private landowners to develop conservation strategies and recommendations when evaluating urban and infrastructure development projects that could affect these

subpopulations. Recovery efforts should be directed toward landscape planning and management strategies that would ensure abundance and distribution of palo de rosa subpopulations to allow cross-pollination and recruitment and contribute to the long-term recovery of the species.

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,'' issuing protective regulations for threatened species, and designating critical habitat for threatened and endangered species. In 2019, jointly with the National Marine Fisheries Service, the Service issued final rules that revised the regulations in 50 CFR parts 17 and 424 regarding how we add, remove, and reclassify threatened and endangered species and the criteria for designating listed species' critical habitat (84 FR 45020 and 84 FR 44752; August 27, 2019). At the same time, the Service also issued final regulations that, for species listed as threatened species after September 26, 2019, eliminated the Service's general protective regulations automatically applying to threatened species the prohibitions that section 9 of the Act applies to endangered species (collectively, the 2019 regulations).

However, on July 5, 2022, the U.S. District Court for the Northern District of California vacated the 2019 regulations (*Center for Biological Diversity* v. *Haaland,* No. 4:19-cv-05206–JST, Doc. 168 (N.D. Cal. July 5, 2022) (*CBD* v. *Haaland*)), reinstating the regulations that were in effect before the effective date of the 2019 regulations as the law governing species classification and critical-habitat decisions. Accordingly, in developing the analysis contained in this final rule, we applied the pre-2019 regulations, which may be reviewed in the 2018 edition of the Code of Federal Regulations at 50 CFR 17.31, 17.71, 424.02, 424.11(d)–(e), and 424.12(a)(1) and (b)(2)). Because of the ongoing litigation regarding the court's vacatur of the 2019 regulations, and the resulting uncertainty surrounding the legal status of the regulations, we also undertook an analysis of whether the final rule would be different if we were to apply the 2019 regulations. That analysis, which we described in a separate memo in the decisional file and posted on *https://www.regulations.gov,* concluded that we would have reached the same decision if we had applied the 2019 regulations. This is because both before and after the 2019 regulations, the standard for whether a species the meets the definition of an endangered species or a threatened species remains the same under the 2019 regulations as under the pre-2019 regulations. Further, we concluded that our determination of the foreseeable future would be the same under the 2019 regulations as under the pre-2019 regulations.

On September 21, 2022, the U.S. Circuit Court of Appeals for the Ninth Circuit stayed the district court's July 5, 2022, order vacating the 2019 regulations until a pending motion for reconsideration before the district court is resolved (*In re: Cattlemen's Ass'n,* No. 22–70194). The effect of the stay is that the 2019 regulations are the governing law. Because of our desire to promptly reclassify a species in a timely manner whenever species meets the definition of a threatened species, rather than revise the proposal in response to the Ninth Circuit's decision for submission of a final rule to the **Federal Register**, we hereby adopt the analysis in the separate memo that applied the 2019 regulations as our primary justification for the final rule. However, due to the continued uncertainty resulting from the ongoing litigation, we also retain the analysis in this preamble that applies the pre-2019 regulations and we conclude that, for the reasons stated in our separate memo analyzing the 2019 regulations, this final rule would have been the same if we had applied the 2019 regulations.

The Act defines an ''endangered species'' as a species that is in danger of extinction throughout all or a significant portion of its range. A ''threatened species'' is defined as a species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range. The Act requires that we determine whether a species is an ''endangered species'' or a ''threatened species'' based on one or any combination 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 have positive effects. We consider these same five factors in downlisting a species from endangered to threatened.

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.'' Because the decision in *CBD* v. *Haaland* vacated our 2019 regulations regarding the foreseeable future, we refer to a 2009 Department of the Interior Solicitor's opinion entitled ''The Meaning of 'Foreseeable Future' in Section 3(20) of the Endangered Species Act'' (M–37021). That Solicitor's opinion states that the foreseeable future ''must be rooted in the best available data that allow predictions into the future'' and extends as far as those predictions are ''sufficiently reliable to

provide a reasonable degree of confidence in the prediction, in light of the conservation purposes of the Act.'' *Id.* at 13.

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.

We consider 50 years to be the foreseeable future within which we can reasonably determine the threats, the magnitude of those threats, and the species' response to those threats. The foreseeable future for the individual factors and threats vary. However, based on the available information from ongoing monitoring of populations known at the time of listing, it is estimated that under natural conditions palo de rosa individuals may require at least 40 years to reach a reproductive size and that the species' reproductive ecology is consistent with late-successional species. Within 50 years, an individual palo de rosa tree would reach a reproductive size and effectively contribute to the next generation. Therefore, this timeframe accounts for maturation, the probability of flowering, effective cross-pollination, setting viable fruits, seed germination, and early seedling survival and establishment while taking into account environmental stochastic events such as drought periods. Some palo de rosa life stages are more sensitive to a particular threat (*e.g.,* seedling and sapling susceptibility to drought conditions); therefore, the species' response to threats in all life stages and the effects of these responses can be reasonably determined within the foreseeable future (50 years).

We can also reasonably predict development and habitat fragmentation and modification within the next 50 years based on current trends. Furthermore, the established timeframe for the foreseeable future provides for the design and implementation of conservation strategies to protect and enhance currently known populations over the next 50 years.

In terms of climate, we recognize that modelled projections for Puerto Rico are characterized by some divergence and uncertainty later in the century (Khalyani et al. 2016, p. 275). However, we have reasonable confidence in projections within a 50-year timeframe representing the foreseeable future for the palo de rosa because uncertainty is reduced within this timeframe. We assessed the climate changes expected in the year 2070 and determined that downscaled future climate change scenarios indicate that Puerto Rico is predicted to experience changes in climate that will affect the palo de rosa (Khalyani et al. 2016, entire). Thus, using a 50-year timeframe for the foreseeable future allows us to account for the effects of projected changes in temperature, shifting of life zones, and increases in droughts in the habitat.

Analytical Framework

The 5-year review (USFWS 2017, entire) 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 the best available information gathered since that time. The 5-year review can be found at *https://www.regulations.gov* under Docket No. FWS–R4–ES–2020–0059.

Summary of Biological Status and Threats

Below, we review the biological condition of the species and its resources and the threats that influence the species' current and future condition to assess the species' overall viability and the risks to that viability.

Habitat Destruction and Modification

Habitat destruction and modification, including forest management practices, were identified as factors affecting the continued existence of the palo de rosa when it was listed in 1990 (55 FR 13488, April 10, 1990). At present, forest management practices within Commonwealth forests are not considered a threat to the palo de rosa because of existing regulatory mechanisms and lack of evidence of direct impacts to the species due to forest management practices. For example, although there is evidence of palo de rosa individuals with multiple stems due to historical deforestation and harvesting for charcoal production in the GCF, selective harvesting and deforestation is no longer a threat to the GCF population. Similar to the GCF, the palo de rosa SCF population (i.e., Quebrada Peces, Quebrada Grande, and Río Loco subpopulations) is also entirely under conservation, and we have no evidence of adverse impacts to the species due to forest management practices.

However, that is not necessarily the case on private lands; the subpopulations of Montes de Barinas and Guayanilla-CORCO (Commonwealth Oil Refining Company) remain vulnerable to deforestation and habitat modification. In Montes de Barinas, the palo de rosa occurs on private properties subject to urban development resulting in encroachment of native dry forest areas and, thus, in the isolation of the palo de rosa (see 79 FR 53303, September 9, 2014, p. 53307, with reference to threats in the same area). These areas also are threatened by deforestation for cattle grazing and the extraction of timber for fence posts (Román-Guzman 2006, p. 40; see 79 FR 53303, September 9, 2014, p. 53307). In fact, active extraction of timber for fence posts has been reported adjacent to the Montes de Barinas subpopulation and on a neighboring property with other endemic species with palo de rosa individuals in the Montes de Barinas population likely to be cut if harvesting continues (Monsegur-Rivera 2003–2006, pers. obs.; Morales 2011, pers. comm.). In addition, the area of Montes de Barinas showed evidence of bulldozing and subdivision for urban development (Román-Guzman 2006, p. 40).

The habitat at the Guayanilla-CORCO population is impacted on a regular basis by the Puerto Rico Energy and Power Authority (PREPA) for the maintenance of power lines and associated rights-of-way (USFWS 2017, p. 16). Impacts to the species' habitat have been reported in that area as a result of construction of access roads to PREPA towers (Monsegur-Rivera 2014–2020, pers. obs.). Such habitat disturbance and modification affect the integrity of palo de rosa habitat and likely result in direct and indirect impacts to individuals. In fact, some access roads go through drainages that provide good habitat for the palo de rosa and could affect microhabitat conditions necessary for seedling germination and recruitment. In addition, these dirt access roads provide corridors for the establishment of exotic plant species like guinea grass (*Megathyrsus maximus)* and zarcilla (*Leucaena leucocephala*), which outcompete the native vegetation (including the palo de rosa) and promote favorable conditions for human-induced fires (USFWS 2017, p. 16). Moreover, these dirt roads are used to access the forested habitat for harvesting of timber for fence posts (Monsegur-Rivera 2014, pers. obs.). Similarly, the habitat in the municipalities of Peñuelas and Ponce (*i.e.,* Punta Cucharas) near the

Guayanilla-Peñuelas population has been severely fragmented by urban development (*e.g.,* housing development, hotels, a jail, a landfill, rock quarries, and highway PR–2) (see 79 FR 53307, September 9, 2014), and due to maintenance of PREPA power lines (Monsegur-Rivera 2020, pers. obs.).

In Sierra Bermeja and Cerro las Mesas, private forested lands also have been impacted through deforestation mainly for agricultural practices (*i.e.,* grazing by cattle and goats, and associated conversion of forested habitat to grasslands) and urban development (*i.e.,* construction of houses and roads) (Cedeño-Maldonado and Breckon 1996, p. 349; USFWS 1998, p. 6; Envirosurvey, Inc. 2016, p. 6). Most of the Sierra Bermeja mountain range was zoned with specific restrictions on development activities to protect the natural resources of the area (Junta de Planificación Puerto Rico (JPPR) 2009, pp. 151–153). This zoning allows for agricultural activities and construction of residential homes with the implementation of best management practices and some limitations (JPPR 2009, p. 151; JPPR 2015, pp. 118–129). Nonetheless, landowners continue impacting the habitat through activities like cutting new access roads on their properties and conversion of forested land to pasture (Pacheco and Monsegur-Rivera 2017, pers. obs.). The palo de rosa population in Sierra Bermeja is limited to two isolated individuals on protected lands (Laguna Cartegena National Wildlife Refuge (LCNWR) and PLN conservation easement) with no evidence of natural recruitment. Similarly, the other two palo de rosa individuals in Guaniquilla-Buye, also in southwest Puerto Rico, are found within private lands subject to urban and tourist development although these plants are not yet impacted.

Core palo de rosa subpopulations occur in the northern karst belt of Puerto Rico (Lugo et al. 2001, p. 1) where approximately 80 percent of the known palo de rosa sites occur on private lands not managed for conservation. These private lands are encroached upon by development and subject to habitat modification activities (*e.g.,* urban development) detrimental to the palo de rosa. The palo de rosa subpopulation at Guajataca Commonwealth Forest (GuCF) is the westernmost record of the species in northern Puerto Rico that lies within an area managed for conservation. As previously discussed, the GuCF subpopulations extend to private lands along the Guajataca Gorge. Although the steep terrain and low agricultural value of this area has protected the subpopulations from habitat modification, some remain vulnerable to infrastructure development (*e.g.,* possible expansion of Highway PR–22 between the municipalities of Hatillo and Aguadilla). For example, three previously unknown subpopulations (including one showing recruitment) were located during the biological assessments for the proposed expansion of Highway PR–22 (PRHTA 2007, p. 19).

Another subpopulation vulnerable to habitat modification is the Merendero-Guajataca; this area is managed for recreation, and the habitat remains threatened by vegetation management activities (*e.g.,* maintenance of green areas and vegetation clearing along trails). Habitat modification can also have implications beyond the direct impacts to a subpopulation. Although the palo de rosa in the Merendero-Guajataca subpopulation have produced flowers, there are no records of fruit production or seedlings (Monsegur-Rivera 2009–2020, pers. obs.); this is likely due to habitat modification at the site. Nonetheless, this subpopulation may interact through cross-pollination with the nearby El Túnel-Guajataca subpopulation and, thus, contribute to observed recruitment in other Guajataca Gorge subpopulations. A palo de rosa subpopulation was located during a biological assessment for the proposed expansion of an existing quarry adjacent to the Río Camuy (Sustache-Sustache 2010, p. 7). We expect that impacts to this subpopulation from the quarry activities will interfere with the natural recruitment of the species along the Río Camuy.

Habitat encroachment is evident on private lands surrounding the Cambalache Commonwealth Forest (CCF), Hacienda La Esperanza Natural Reserve, and Tortuguero Lagoon Natural Preserve where at least six known subpopulations occur within private lands adjacent to areas subject to development or infrastructure projects. The subpopulations at Hacienda Esperanza extend to private lands on their southern boundary where development projects have been proposed (*e.g.,* Ciudad Médica del Caribe; PRDNER 2013, pp. 24–25). Habitat modification in those areas can result in direct impacts to palo de rosa individuals and interrupt the connectivity between subpopulations (*e.g.,* cross-pollination). In addition, the analysis of aerial images indicates four additional subpopulations occurring on private lands in the proximity of Hacienda Esperanza are encroached upon by urban development, rock quarries, and agricultural areas (Monsegur-Rivera 2018, pers. obs.).

The palo de rosa subpopulations at Hacienda Sabanera in Dorado have been encroached upon by development. We prepared a biological opinion during the consultation process for the construction of Hacienda Sabanera and its associated impacts on the palo de rosa (USFWS 1999, entire). The biological opinion indicates that approximately 83 of the 200 acres (including forested *mogote* habitat) would be impacted, and 6 palo de rosa adults, 12 saplings, and 35 seedlings would be directly affected by the proposed project (USFWS 1999, p. 6). Although we concluded that the project would not jeopardize the continued existence of the palo de rosa (USFWS 1999, p. 7), the project resulted in substantial loss of forested habitat promoting edge habitat favorable for intrusion by weedy species. In addition, a series of *mogotes* along Higuillar Avenue, south of Hacienda Sabanera, are expected to be impacted by proposed road construction (PRDNER 2013, pp. 22–24), and we have no information that plans for the road have been withdrawn.

Encroachment conditions similar to those in Hacienda Sabanera also occur in the areas of La Virgencita (north and south), Mogotes de Nevares, Sabana Seca, Parque de las Ciencias, Parque Monagas, and Fort Buchanan. For example, at La Virgencita, the palo de rosa population is bisected by Highway PR–2 and could be further impacted if the road is widened in the future. Landslides have occurred in this area in the past, and road maintenance in this vulnerable area may trigger slide events (PRDNER 2015a, pp. 13–15). In addition, palo de rosa individuals are found within the PREPA power line rights-of-way (Power Line 41500), and there is evidence the overall decrease or absence of saplings or juveniles in the La Virgencita south population may be the result of habitat modification and resulting edge habitat due to maintenance of the PREPA power line rights-of-way (PRDNER 2015a, pp. 13–15; USFWS 2018, p. 33). In addition, the westernmost palo de rosa subpopulation occurs in the municipality of Aguadilla in an area identified by the Puerto Rico Highway and Transportation Authority (PRHTA) as part of the proposed expansion of highway PR–22 (USFWS 2017, p. 7).

The Mogotes de Nevares, Sabana Seca, Parque de las Ciencias, Parque Monagas, and Fort Buchanan subpopulations are also severely fragmented by urban development and a rock quarry (USFWS 2017, p. 12). Such fragmentation compromises the connectivity between subpopulations.

Some of these areas are vulnerable to landslides due to changes in the contour of the terrain associated with a high density of urban development, encroachment, and quarry operations (*e.g.,* Parque Monagas and Fort Buchanan) (U.S. Army 2014, p. 3). Although Fort Buchanan habitat is set aside for conservation, landslides have occurred within and near the fort, and the subpopulation remains threatened due to potential landslides. Fort Buchanan is evaluating a possible slope stabilization project for the site (U.S. Army 2014, pp. 4, 9–11).

The palo de rosa occurs within several National Parks on Hispaniola (Dominican Republic and Haiti) (*e.g.,* Parque Nacional del Este, Parque Nacional Los Haitises, and Parque Nacional Sierra de Bahoruco). Despite the occurrence of the species within areas managed for conservation (*e.g.,* Parque del Este and Sierra de Bahoruco), these areas continue to be affected by illegal deforestation for agriculture and charcoal production, and enforcement of existing regulations is limited (Jiménez 2019, pers. comm.). The dependence of the human population of Haiti on wood-based cooking fuels (*e.g.,* charcoal and firewood) has resulted in substantial deforestation and forest conversion to marginal habitat in both Haiti and adjacent regions of the Dominican Republic (*e.g.,* Sierra de Bahoruco). The expected increases in the human population in Haiti will result in an increase in the demand for such fuel resources (USFWS 2018, p. 4).

In fact, deforestation and habitat degradation in the Sierra de Bahoruco and the surrounding region has recently been increasing (Grupo Jaragua 2011, entire; Goetz et al. 2011, p. 5; Simons et al. 2013, p. 31). In 2013, an estimated 80 square kilometers (19,768.4 acres) of forest in the area were lost primarily due to illegal clearing of forested habitat for agricultural activities (Gallagher 2015, entire). Vast areas (including suitable habitat for the palo de rosa) along the border between Haiti and Dominican Republic (including within National Parks) are being cleared and converted to avocado plantations (Monsegur-Rivera 2017, pers. obs.). Such deforestation extends to other National Parks, such as Parque Nacional del Este and Isla Saona, where illegal vegetation clearing for agriculture and tourism development continue to occur (Monsegur-Rivera 2011, pers. obs.). For example, analysis of aerial images from Isla Saona (Parque Nacional del Este) show extensive deforestation and conversion of forested habitat to agricultural lands during the last decade (Monsegur-Rivera 2019, pers. obs.). Impacts to palo de rosa populations due to development and habitat destruction and modification in Hispaniola are not described in the final listing rule for the species (55 FR 13488, April 10, 1990), but current information indicates that the palo de rosa and its habitat are being affected by deforestation for agricultural practices and extraction for fuel resources.

To summarize, forest management practices within Commonwealth Forests are no longer considered a threat to the palo de rosa. The palo de rosa populations at the CCF, GCF, GuCF, Río Abajo Commonwealth Forest (RACF), and SCF are protected as these forest reserves are protected by Commonwealth laws and managed for conservation. Nonetheless, populations extending onto private lands in southern Puerto Rico are vulnerable to impacts from urban development, agricultural practices (*e.g.,* harvesting fence posts), and maintenance of power lines and rights-of-way (Monsegur-Rivera 2019, pers. obs.). In addition, the majority of the subpopulations along the northern karst of Puerto Rico occur on private lands where habitat encroachment occurs and creates edge habitat conditions (habitat intrusion by exotics that precludes seedling establishment) and affects connectivity and natural recruitment. For example, despite the abundance of individuals at the palo de rosa subpopulation adjacent to the former CORCO in Guayanilla-Peñuelas, recruitment is limited due to the multiple stressors, including maintenance of power line rights-of-way, fence post harvest, and intrusion of exotic plant species, as well as the changes in microhabitat conditions at these sites, which preclude seedling establishment. Furthermore, habitat fragmentation along the northern coast may affect cross-pollination among subpopulations resulting in the lack of fruit production at isolated subpopulations with a smaller number of individuals (*e.g.,* Merendero-Guajataca).

Conservation Efforts and Regulatory Mechanisms

In the final listing rule (55 FR 13488, April 10, 1990), we identified the inadequacy of existing regulatory mechanisms as one of the factors affecting the continued existence of the palo de rosa. At that time, the species had no legal protection because it had not been included in Puerto Rico's list of protected species. Once the palo de rosa was federally listed, legal protection was extended by virtue of an existing cooperative agreement (under section 6 of the Act) with the Commonwealth of Puerto Rico. Federal listing ensured the addition of the palo de rosa to the Commonwealth's list of protected species, and the Commonwealth designated the palo de rosa as endangered in 2004 (PRDNER 2004, p. 52).

In 1999, the Commonwealth of Puerto Rico approved Law No. 241, also known as the New Wildlife Law of Puerto Rico (*Nueva Ley de Vida Silvestre de Puerto Rico*), which legally protects the palo de rosa. The purpose of this law is to protect, conserve, and enhance both native and migratory wildlife species and declare as property of Puerto Rico all wildlife species within its jurisdiction. The law also regulates 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 Regulation to Govern Vulnerable Species and Species in Danger of Extinction in the Commonwealth of Puerto Rico (*Reglamento para Regir el Manejo de las Especies Vulnerables y en Peligro de Extinción en el Estado Libre Asociado de Puerto Rico*). Article 2.06 of Regulation 6766 prohibits, among other activities, collecting, cutting, and removing of listed plant individuals within the jurisdiction of Puerto Rico (PRDNER 2004, p. 11). The provisions of Law No. 241–1999 and Regulation 6766 extend to private lands. However, the protection of listed species on private lands is challenging as landowners may be unaware that species are protected and may damage those species (*e.g.,* by cutting, pruning, or mowing) (USFWS 2017, p. 23), which might be the case were a palo de rosa tree cut for fence posts.

Commonwealth of Puerto Rico Law No. 133 (1975, as amended in 2000), also known as Puerto Rico Forests' Law (*Ley de Bosques de Puerto Rico*), protects the areas of the GCF, SCF, GuCF, RACF, and CCF, and, by extension, the palo de rosa individuals on them. 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. The PRDNER also identifies these forests as ''critical wildlife areas.'' This designation constitutes a special recognition 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 project endorsements or permit approvals (PRDNER 2005, pp. 211–216).

In addition, Commonwealth of Puerto Rico Law No. 292 (1999), also known as Puerto Rico Karst Physiographic Protection and Conservation Law (*Ley para la Protección y Conservación de la Fisiografía Cársica de Puerto Rico*), regulates the extraction of rock and gravel for commercial purposes and prohibits the cutting of native and endemic vegetation in violation of other laws (e.g., Law No. 241–1999 and Regulation 6766). Law No. 292–1999 applies to karst habitat in both southern and northern Puerto Rico.

On the Laguna Cartegena National Wildlife Refuge (LCNWR), habitat is managed in accordance with the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd–668ee, as amended by the National Wildlife Refuge System Improvement Act of 1997 [Improvement Act]), and collection of plants within refuge lands is prohibited by 50 CFR 27.51. The LCNWR has a comprehensive conservation plan that includes measures for the protection and recovery of endangered and threatened plant species (USFWS 2011, p. 35). Furthermore, the Puerto Rico Planning Board (Junta de Planificación de Puerto Rico) classified most of the mountain range of Sierra Bermeja as a District of Conservation of Resources (Distrito de Conservación de Suelos) (JPPR 2009, p. 151). This conservation category identifies lands with particular characteristics that need to be maintained or enhanced (*e.g.,* provide habitat for species of concern) and establishes specific restrictions for development (JPPR 2009, p. 151). Also, in 2015, the Puerto Rico Planning Board approved the Land Use Plan for Puerto Rico and categorized most of the Sierra Bermeja Mountains, including the LCNWR, as Rustic Soil Specially Protected (Suelo Rustico Especialmente Protegido) where no urban development is considered due to location, topography, aesthetic value, archaeological value, or ecological value of land (Puerto Rico Planning Board Interactive Map 2020).

The palo de rosa individuals found at Hacienda La Esperanza Natural Reserve are protected as this reserve also is managed for conservation by PLN, and the management plan considers the palo de rosa in its activities (PLN 2011a, p. 67). The PLN also manages the Río Encantado Natural Protected Area, a mosaic of at least 1,818 ac (736 ha) of forested habitat (including extensive areas of suitable habitat for the palo de rosa) in the municipalities of Florida, Manatí, and Ciales, and PLN plans to continue acquiring habitat at this geographical area (PLN 2011b, p. 5). Also, the palo de rosa is protected and managed under an MOU among the U.S. Army Garrison, Fort Buchanan, the Service, and PRDNER (U.S. Army, Fort Buchanan 2015, entire). This palo de rosa subpopulation is found in a *mogote* designated for conservation (USACE 2014, p. 3).

In addition, the private natural reserves of El Tallonal and Mata de Plátano, which contain subpopulations of the palo de rosa in the municipality of Arecibo, are protected from habitat modification and have approved private forest stewardship management plans that include measures for the protection of listed species within the properties (PRDNER 2005, 47 pp.). We have an extended history of collaboration with these two reserves in providing financial and technical assistance for the implementation of recovery actions to benefit listed species.

In addition to protections provided by the Act, the species is protected from collection and provided management considerations by the Improvement Act within one national wildlife refuge (LCNWR). In addition, the Commonwealth of Puerto Rico legally protects the palo de rosa, including protections to its habitat, through Commonwealth Law No. 241–1999 and Regulation 6766, which prohibit, among other actions, collecting, cutting, and removing listed plants. While we are downlisting this species, we do not expect this species to be removed from legal protection by the Commonwealth. Although these protections extend to both public and private lands, as discussed above, protection of this species on private land is challenging. Habitat that occurs on private land is subject to pressures from agricultural practices (*e.g.,* grazing, harvesting fence posts) and development. Accidental damage or extirpation of individuals has occurred because private landowners or other parties on the property may not be able to identify the species or may not be aware that the palo de rosa is a protected species. Habitat modifications and fragmentation continue to occur on private lands, which can increase the likelihood of habitat intrusion by exotic plants and human-induced fires and reduce connectivity between populations and the availability of suitable habitat for the species' recruitment. In short, this plant is now more abundant and widely distributed, including within conservation land, so the threat due to inadequacy of regulatory mechanisms has been reduced. However, the palo de rosa occurrences on private lands continue to need enforcement of existing prohibitions as well as increased attention and associated outreach to highlight the species' conservation and importance.

Recruitment

Here, we summarize the continuing threat of low recruitment on palo de rosa populations. We describe this influence on palo de rosa viability in greater detail under *Recruitment and Population Structure,* above. Characteristics of the palo de rosa's life history may contribute to the slow or lack of recruitment observed in current subpopulations (Monsegur-Rivera 2018, pers. obs.). Individual palo de rosa trees grow extremely slowly and may require at least 40 years to reach a reproductive size. Dispersal and colonization of gravity-dispersed palo de rosa seeds are limited, and seedlings face competition from the parental tree. As a late-successional species, palo de rosa requires an open canopy to promote seedling growth and is adapted to stable habitat conditions with a regime of natural disturbances such as hurricanes (Breckon and Kolterman 1996). Cross-pollination between or among subpopulations maximizes the likelihood of fruit production and contributes to recruitment, which underscores the importance of conserving the species through a landscape approach to promote effective crosspollination and natural recruitment. Although current information on population structure indicates the species requires some open canopy areas to promote recruitment, widespread deforestation fragments the remnants of suitable habitat and creates edges (habitat transition zones).

There is no evidence of natural recruitment at this time for 40 of the 66 known subpopulations, although the species' life history implies that recruitment may still occur in these populations when a canopy opening is created and suitable conditions for recruitment are present. Forest cover in Puerto Rico has increased since the widespread deforestation in the 1930s (Marcano-Vega et al. 2015, p. 67), but palo de rosa was likely more widespread prior to deforestation and habitat fragmentation. A life history requirement for a closed canopy forest for adult individuals with canopy openings to promote seedling and sapling recruitment was likely more sustainable in populations with greater abundance and distribution than the species currently exhibits. Smaller and more isolated subpopulations are less able to provide closed canopy conditions with small pockets of openings; thus, inherent palo de rosa

life history characteristics have an effect on recruitment, and this effect is expected to continue in the future.

Hurricanes and Related Threats

At the time of listing, we considered palo de rosa individuals vulnerable to flash flood events (see 55 FR 13490, April 10, 1990). Flash floods remain a moderate threat and may compromise the natural recruitment of seedlings, particularly on subpopulations along the southern coast of Puerto Rico where the species occurs at the bottom of drainages (USFWS 2017, p. 17). Below, we describe these threats and other natural and human-caused factors affecting the continued existence of the palo de rosa.

As an endemic species to the Caribbean, the palo de rosa is expected to be well adapted to tropical storms and associated disturbances such as flash floods. Under natural conditions, healthy populations with robust numbers of individuals and recruitment should withstand tropical storms, and these weather and climatic events may be beneficial for the population dynamics of the palo de rosa by creating small openings in the closed canopy to allow seedling and sapling growth. The islands of the Caribbean are frequently affected by hurricanes. Puerto Rico has been directly affected by four major hurricanes since 1989. Successional responses to hurricanes can influence the structure and composition of plant communities in the Caribbean islands (Lugo 2000, p. 245; Van Bloem et al. 2003, p. 137; Van Bloem et al. 2005, p. 572; Van Bloem et al. 2006, p. 517). Examples of the visible effects of hurricanes on the ecosystem includes 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 averages about 41.5 percent (Lugo 2000, p. 245). Hence, small palo de rosa populations may be severely impacted by hurricanes resulting in loss of individuals or extirpation. The impact of catastrophic hurricanes is exacerbated in small populations.

There is evidence of damage to palo de rosa individuals due to previous hurricane events (*e.g.,* Hurricane Georges in 1998) at the Hacienda Sabanera and Hacienda Esperanza subpopulations (USFWS 2017, p. 17). A post-hurricane assessment of selected palo de rosa populations was conducted to address the impact of Hurricane María (USFWS 2018, entire). Even though Hurricane María did not directly hit the GCF, evidence of damage to palo de rosa trees was recorded at Cañon Las Trichilias (*e.g.,* uprooted trees and main trunk broken) (USFWS 2018, p. 3). Additional evidence of direct impacts (including mortality) due to Hurricane María were recorded in the Hacienda Esperanza, Hacienda Sabanera, Parque Monagas, and La Virgencita subpopulations (USFWS 2018, entire). An analysis of high-resolution aerial images from these sites following Hurricane María shows extensive damage and modification to the forest structure with subpopulations in southern Puerto Rico exposed to less wind damage (Hu and Smith 2018, pp. 1, 17). When comparing affected subpopulation abundance, the evidence of direct impacts to palo de rosa individuals due to Hurricane María appear to be discountable. However, this post-hurricane assessment focused on previously surveyed robust subpopulations (USFWS 2018, entire). Overall, the subpopulations along the northern coast of Puerto Rico suffered severe defoliation with trees showing mortality of the crown apex, but some trees showed regrowth 6 months post-hurricane (USFWS 2018, entire).

Hurricane damage extends beyond the direct impacts to individual palo de rosa trees. As mentioned above, the subpopulations along the northern coast of Puerto Rico are severely fragmented due to prior land-use history. Disturbance and edge effects associated with urban development and infrastructure corridors may promote the establishment and spread of invasive, nonnative plant species, and lianas (woody vines) typical of early or intermediate successional stages, which may result in rare and endemic plant species being outcompeted (Hansen and Clevenger 2005, p. 249; Madeira et al. 2009, p. 291). Hurricanes may not introduce nonnative species to the forest structure, but they can promote favorable conditions for these species and, therefore, increase the relative abundance of nonnatives.

Habitat intrusion by exotics is positively correlated to the distance of the disturbance gap (Hansen and Clevenger 2005, p. 249). Thus, the adverse effects from human-induced habitat disturbance (*e.g.,* deforestation and urban development) can be exacerbated by hurricanes by creating or increasing this disturbance gap. A post-hurricane assessment provided evidence that all palo de rosa subpopulations along the north coast of Puerto Rico showed habitat intrusion by weedy vines (*e.g., Dioscorea alata* (ñame), *Thunbergia grandiflora* (pompeya), *Cissus erosa* (caro de tres hojas), and *Cayaponia americana* (bejuco de torero)) following Hurricane María (USFWS 2018, entire).

In the same assessment, weedy vegetation and vines densely covered an area in the Hacienda Esperanza subpopulation where the palo de rosa occurs at a low-elevation *mogote* and the Hacienda Sabanera where the habitat that harbors the palo de rosa subpopulation was cut to the edge due to urban development (USFWS 2018, pp. 8–18). Examination of aerial images of the habitat shows a flattened forest structure indicative of hurricane damage with standing trees missing main branches and canopy. Competition with nonnative species and weedy vines for necessary resources (space, light, water, nutrients) may reduce natural recruitment by inhibiting germination and outcompeting seedlings of native species (Rojas-Sandoval and Meléndez-Ackerman 2013, p. 11; Thomson 2005, p. 615). The palo de rosa seedlings at Hacienda Esperanza were covered (and outcompeted) by weedy vines following Hurricane María (USFWS 2018, p. 8). At Fort Buchanan, 6 months after Hurricane María, the vegetation at the base of the *mogote* on that property was overgrown and dominated by weedy species. However, weedy vegetation had not reached palo de rosa individuals at the top of the *mogote,* and there was little evidence of adverse impacts to seedlings and saplings due to competition with exotics (USFWS 2018, p. 8).

The GCF palo de rosa subpopulations are surrounded by a large tract of intact native forest providing a buffer zone that precludes habitat invasion by exotics. Despite the overall evidence of canopy opening and some impacts to palo de rosa individuals due to Hurricane María, there was no evidence of habitat intrusion by exotics at Cañon Las Trichilias and Cañon Hoya Honda (USFWS 2018 pp. 3–8), which highlights the importance of maintaining native forested habitat that provides a buffer for palo de rosa subpopulations.

The above discussion indicates that the potential adverse impacts due to hurricanes and the associated habitat intrusion by exotic plant species are variable depending on habitat fragmentation, topography, distance to disturbance, and the size of the subpopulation. It further highlights the importance of having healthy populations with robust numbers of individuals and a stratified population structure (*i.e.,* seedlings, saplings, and adults) to allow for recovery following hurricanes and associated habitat disturbance.

Climate Change

Regarding the effects of climate change, the Intergovernmental Panel on Climate Change (IPCC) concluded that 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 the 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 effects to the species and its habitat that arise from changes in environmental conditions associated with various aspects of climate change.

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 (Coupled Model Intercomparison Project; Khalyani et al. 2016, pp. 267, 279–280). These scenarios are generally comparable and span the more recent representative concentration pathways (RCP) scenarios from RCP 4.5 (B1) to RCP 8.5 (A2) (IPCC 2014, p. 57). The B1 and A2 scenarios encompass the projections and effects of the A1B scenario; we will describe our analyses for the B1 (RCP 4.5) and A2 (RCP 8.5) scenarios and recognize the A1B (RCP 6.0) projections and effects that fall into this range.

The modelling of climate projections expected in Puerto Rico in our analysis extends to 2100. We acknowledge inherent divergence in climate projections based on the model chosen with uncertainty increasing later in the century (Khalyani et al. 2016, p. 275). However, we assessed the climate changes expected in the year 2070, a 50-year timeframe representing the foreseeable future for the palo de rosa (as described in *Regulatory Framework,* above). Under the RCP 4.5 and 8.5 scenarios, precipitation declines while temperature and total dry days increase resulting in extreme drought conditions that would result in the conversion of subtropical dry forest into dry and very dry forest (Khalyani et al. 2016, p. 280). Downscaled future climate change scenarios indicate that by 2070, Puerto Rico is predicted to experience a decrease in rainfall along with increased drought intensity under RCP 4.5 and 8.5 (Khalyani et al. 2016, p. 265; Bhardwaj et al. 2018, p. 133; U.S. Global Change Research Program 2018, 20:820). The western region of Puerto Rico has already experienced negative trends in annual rainfall (PRCCC 2013, p. 7).

Temperatures are also expected to rise between 2020 and 2070. Under RCP 4.5, a mean temperature increase of 4.6–5.4 degrees Celsius (°C) (40.3–41.7 degrees Fahrenheit (°F)) is projected, and an increase of 7.5–9 °C (45.5–48.2 °F) is projected under RCP 8.5 (Khalyani et al. 2016, p. 275). Precipitation decreases influenced by warming 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). Downscaled general circulation models predict dramatic shifts in the life zones of Puerto Rico with potential loss of subtropical rain, moist, and wet forests, and the appearance of tropical dry and very dry forests are anticipated under both RCP 4.5 and 8.5 scenarios (Khalyani et al. 2016, p. 275). Nonetheless, such predicted changes in life zones may not severely affect the palo de rosa due to its distribution throughout Puerto Rico, which includes different life zones and habitat types.

Vulnerability to climate change impacts is a function of sensitivity to those changes, exposure to those changes, and adaptive capacity (IPCC 2007, p. 89; Glick and Stein 2010, p. 19). As described earlier, the palo de rosa is a species with low recruitment and seed dispersal limited to gravity diminishing its potential to reach areas with suitable microhabitat conditions for establishment. Despite the evidence of multiple reproductive events (fruit production) in one subpopulation, low recruitment of saplings and a population structure dominated by adult trees could be the result of mortality and thinning of individuals at the seedling stage due to drought stress. The projected prolonged droughts expected with climate change may affect the phenology of the palo de rosa resulting in the loss of developing flowers and fruits or reduce the viability of the few produced seeds reducing the likelihood of natural recruitment. In addition, hurricanes followed by extended periods of drought caused by climate change may result in microclimate alterations that could allow other plants (native or nonnative) to become established and invasive (Lugo 2000, p. 246), which would preclude the recruitment of palo de rosa seedlings.

Based on the distribution of the palo de rosa and its habitat, we have determined that conditions associated with climate change could impact this species. Climate change is almost certain to affect terrestrial habitats and the palo de rosa; however, the future extent and timing of those effects beyond the foreseeable future is uncertain. Some terrestrial plant populations are able to adapt and respond to changing climatic conditions (Franks et al. 2013, entire), but the palo de rosa's ability to do so is unknown. A sound, long-term monitoring of known palo de rosa populations is needed to understand the effects on the species' viability.

In summary, other natural and manmade factors, such as hurricanes and related threats due to habitat fragmentation, edge habitat, habitat intrusion by exotic plant species, and the low recruitment and limited dispersal of the palo de rosa, are current threats to the species. Hurricanes and post-hurricane habitat encroachment and nonnative plant invasion have affected subpopulations along the northern coast of Puerto Rico (USFWS 2018, entire). Invasive species can preclude the establishment of new palo de rosa individuals through competition for sunlight, nutrients, water, and space to grow. Although climate change is almost certain to affect terrestrial habitats, there is uncertainty about how predicted future changes in temperature, precipitation, and other factors will influence the palo de rosa.

Small Population Size

At the time of listing (55 FR 13488, April 10, 1990), we considered small population size as a threat affecting the continued survival of the palo de rosa based on the species' limited distribution and low number of individuals (*i.e.,* only nine individuals throughout the species' range in Puerto Rico). Based on this information, we considered the risk of extinction of the palo de rosa very high. New distribution and abundance information available since the species was listed reflects that the palo de rosa is more abundant and widely distributed than previously thought (USFWS 2017, entire); thus, we no longer consider limited distribution as an imminent threat to this species. However, at least 37 (56 percent) of the known subpopulations are composed of 10 or fewer individuals. The effect of small population size exacerbates other threats and makes these subpopulations vulnerable to extirpation by stochastic and catastrophic events.

Overall Summary of Factors Affecting the Species

We have carefully assessed the best scientific and commercial information available regarding the threats faced by the palo de rosa in developing this rule. Limited distribution and a low number of individuals were considered a threat

to the palo de rosa when we listed the species (55 FR 13488, April 10, 1990), but recent information indicates the species is more abundant and widely distributed than known at the time of listing. However, other threats are still affecting the palo de rosa. Based on the analysis above, although we no longer consider limited distribution as an imminent threat to this species, we conclude that habitat destruction and modification on privately owned lands (particularly along the northern coast of Puerto Rico) and other natural or manmade factors (*e.g.,* hurricanes, habitat fragmentation resulting in lack of connectivity between individuals, and habitat encroachment by invasive species), while greatly reduced, continue to threaten palo de rosa populations. In addition, low recruitment related to sporadic flowering and fruit production and the slow growth of seedlings under close canopy conditions (*e.g.,* species reproductive biology and ecology) coupled with the threats discussed above are expected to remain threats to the palo de rosa.

It is also expected that the palo de rosa will be affected by climate change within the foreseeable future, particularly by generalized changes in precipitation and drought conditions. Climate change is expected to result in more intense hurricanes and extended periods of drought. Increased hurricanes are expected to cause direct mortality of adult trees downed due to high winds whereas more intense drought conditions are expected to reduce the species' reproductive output (reduced flowering and fruiting events) and preclude seedling and sapling recruitment. However, based on the best available data, we do not consider climate change to represent a current or an imminent threat to this species across its range.

Species viability, or the species' ability to sustain populations over time, is related to the species' ability to withstand catastrophic population- and species-level events (redundancy) to adapt to novel changes in its biological and physical environment (representation) and to withstand environmental and demographic stochasticity and disturbances (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. A highly resilient palo de rosa population should be characterized by sufficient abundance and connectivity between reproductive individuals to allow for reproductive events and cross-pollination, an age class structure representative of recruitment greater than mortality, multiple subpopulations within the population, and the availability of high-quality habitat to allow for recruitment. High representation for the species is characterized by multiple populations occurring within a wide range of environmental conditions (*e.g.,* substrate and precipitation) that allow for sufficient genetic variability. Multiple resilient populations across the range of the species characterize high redundancy for the palo de rosa.

We evaluated the biological status of the palo de rosa both currently and into the future considering the species' viability as characterized by its resiliency, redundancy, and representation. Based on the analysis of available herbarium specimens, we have determined the species' distribution and abundance was once more common and widespread and likely was a dominant late-successional species of coastal to middle elevation (500 m (1,640 ft)) habitats and even extended to coastal valleys and sand dunes (Monsegur-Rivera 2019, pers. obs.).

The current known palo de rosa subpopulations are remnants of the species' historical distribution persisting on areas of low agricultural value (*e.g.,* top of the *mogotes*) that were affected by deforestation for charcoal production as evidenced by individuals with multiple trunks of palo de rosa sprouting from the same base. Based on the available information on the palo de rosa's natural distribution at the time of listing as well as considering that 40 of the known 66 subpopulations currently show no recruitment and that no subpopulations appear to be expanding due to natural dispersal, palo de rosa populations exhibit reduced resiliency. No subpopulations appear to be dispersing, and no populations are highly resilient. None of the currently known palo de rosa subpopulations are considered a recent colonization event or natural expansion of the species within its habitat.

The species persisted through the almost entire deforestation of Puerto Rico with less than 6 percent of remaining forested habitat across the island by the 1930s (Franco et al. 1997, p. 3) when the low-elevation coastal valleys habitat of the palo de rosa was extensively deforested for agricultural practices (*e.g.,* sugar cane and tobacco plantations). There are broad accounts regarding the extensive deforestation and habitat modification that occurred in Puerto Rico until the 1950s (Franco et al. 1997, p. 3), which resulted in changes in forest structure and diversity, pollinators' assemblages, seed dispersers, and the prevailing microhabitat conditions in which the palo de rosa evolved. Despite the return from such deforestation, known subpopulations show a clustered and patchy distribution and are characterized by a population structure dominated by adults. Moreover, the species faces a low recruitment rate and slow growth resulting in few saplings reaching a reproductive size; in addition, the species shows minimal or no dispersal (limited to gravity). Based on our observations, it has taken about 60 years from the peak of deforestation (1930s) for the palo de rosa to show some initial evidence of recruitment.

We consider that the palo de rosa has limited redundancy as it is known from multiple subpopulations (66) throughout its geographical range representing 14 natural populations distributed throughout the southern and northern coasts of Puerto Rico. Nonetheless, about 37 (56 percent) of the known subpopulations are composed of 10 or fewer individuals and show little or no recruitment and, thus, reduced resiliency. As described above, the species faces a low recruitment rate, slow growth and limited dispersal, and patchy and small subpopulations resulting in an increased vulnerability to extirpation of these subpopulations. All of these characteristics are limiting factors and make the species vulnerable to catastrophic and stochastic events, such as hurricanes and droughts, that can cause local extirpations. The best available information indicates that the palo de rosa is not naturally expanding into or colonizing habitats outside the areas where it is known to occur.

In terms of the representation of the palo de rosa, we have no data on its genetic variability. Although the species occurs in a wide range of habitats and environmental conditions, it has a fragmented distribution, scattered (sporadic) flowering events, and a low recruitment rate. Thus, little or no genetic exchange is thought to occur between extant subpopulations likely resulting in outbreeding depression, which may explain the lack of effective reproduction and recruitment (Frankham et al. 2011, p. 466). The low recruitment rate results in little transfer of genetic variability into future generations, limits the expansion of the species outside its current locations, and limits its ability to adapt to changing environmental conditions. For example, the loss or reduction of connectivity between subpopulations in areas like Arecibo-Vega Baja, Dorado, La Virgencita, Mogotes de Nevares, and

San Juan-Fajardo can be detrimental to the long-term viability of the species as it affects cross-pollination and, therefore, gene flow. In fact, the only populations that occur entirely within native forest areas managed for conservation are GCF and SCF. This continued protected habitat provides for an effective cross-pollination (gene flow) that can secure the long-term viability of the species. However, the overall representation of the palo de rosa is reduced as the GCF and SCF populations are restricted to the southern coast, and the genetic representation of the palo de rosa in the northern karst area, a different ecological environment, is vulnerable because that habitat is threatened by destruction or modification.

Determination of Status

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 meets the definition of an 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 within the foreseeable future throughout all or a significant portion of its range.'' The Act requires that we determine whether a species meets the definition of endangered species or threatened species based on one or more 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 have determined that the palo de rosa's current viability is higher than was known at the time of listing (population current estimate of 1,144 individuals in 66 subpopulations) based on the best available information. The increase in the number of known individuals and new localities reflects increased survey efforts but does not necessarily indicate that previously known populations are naturally expanding their range. The number of palo de rosa individuals has changed from 9 individuals in protected lands at the time of listing to 407 individuals (32 percent of subpopulations) occurring in areas managed for conservation (*e.g.,* Commonwealth Forest and Federal lands). Furthermore, 396 individuals (38 percent of subpopulations) occur in areas subject to little habitat modification due to the steep topography in the northern karst region of Puerto Rico. The remaining 30 percent of the subpopulations (containing approximately 341 individuals) occur within areas severely encroached upon by and vulnerable to urban or infrastructure development. Nonetheless, habitat destruction and modification on privately owned lands (particularly along the northern coast of Puerto Rico) and other natural or manmade factors (such as hurricanes, habitat fragmentation, lack of connectivity between populations, habitat intrusion by invasive species, and the species' reproductive biology) continue to threaten the viability of the palo de rosa.

Although population numbers and abundance of the palo de rosa have increased and some identified threats have decreased, our analysis indicates that threats remain. After assessing the best available information, we conclude that the palo de rosa no longer meets the Act's definition of an endangered species throughout all of its range. We therefore proceed with determining whether the palo de rosa meets the Act's definition of a threatened species (*i.e.,* is likely to become endangered within the foreseeable future) throughout all of its range.

In terms of habitat destruction and modification, we can reasonably determine that 70 percent of subpopulations (71 percent of individuals) are not expected to be substantially affected by habitat destruction and modification in the foreseeable future. This majority occurs within protected lands managed for conservation (36 percent of the known individuals or 32 percent of subpopulations) or on private lands with low probability of modification due to steep topography (35 percent of the known individuals or 38 percent of subpopulations). However, for the 30 percent of subpopulations (30 percent of the known individuals) occurring in areas severely encroached upon by and vulnerable to urban or infrastructure development now and into the future, we are reasonably certain these subpopulations will continue to have a lower resiliency (due to reduced connectivity (cross-pollination) and lack of recruitment) and, in some cases, may experience the loss of individuals or subpopulations adjacent to critical infrastructure such as highways or other development within the foreseeable future (*e.g.,* Hacienda Sabanera, PR–2 and PR–22 maintenance and expansion, Islote Ward extirpation).

We have evidence that some populations are showing signs of reproduction and recruitment. However, due to the slow growth of the species it may take several decades to ensure these recruitment events effectively contribute to a population's resiliency (new individuals reach a reproductive size). Despite no longer considering limited distribution as an imminent threat to this species, we have identified factors associated with habitat modification and other natural or manmade factors that still have some impacts on the palo de rosa and affect the species' viability and effective natural recruitment. The species still faces dispersal problems, and the recruitment is still limited to the proximity of parent trees; we have no evidence of a palo de rosa population that is the result of a recent colonization event or a significant population expansion. This renders the known subpopulations vulnerable to adverse effects related to habitat fragmentation and lack of connectivity, which may preclude future recruitment and the population's resiliency.

In addition, despite the presence of regulations protecting the species both on public and private lands, the protection of palo de rosa trees on private lands remains challenging. Habitat modifications and fragmentation continue to occur on private lands, which can increase the likelihood of habitat intrusion by exotic plants and human-induced fires and reduce connectivity between populations (affecting cross-pollinations) and the availability of suitable habitat for the natural recruitment of the species. Still, none of these is an imminent threat to the species at a magnitude such that the taxon warrants endangered status across its range. Thus, after assessing the best available information, we conclude that the palo de rosa is not currently in danger of extinction but likely to become in danger of extinction in 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) (*Center for Biological Diversity*) vacated

the aspect of the Final Policy on Interpretation of the Phrase ''Significant Portion of Its Range'' in the Endangered Species Act's Definitions of ''Endangered Species'' and ''Threatened Species'' (79 FR 37578, July 1, 2014) that provided that the 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 *Center for Biological Diversity,* we now consider whether there are any significant portions of the species' range where the species is in danger of extinction now (*i.e.,* endangered). In undertaking this analysis for the palo de rosa, 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 may be endangered. Kinds of threats and levels of threats are more likely to vary across a species' range if the species has a large range rather than a very small natural range, such as the palo de rosa. Species with limited ranges are more likely to experience the same kinds and generally the same levels of threats in all parts of their range.

For the palo de rosa, we considered whether the threats are geographically concentrated in any portion of the species' range at a biologically meaningful scale in the context of its small natural range or if the status of the species differs in a portion of the range due to other factors. We examined the following threats: habitat destruction, fragmentation, and modification; invasive species; hurricanes; and the effects of climate change, including cumulative effects. We have identified habitat destruction and modification as threatening known populations in three of the five areas along the southern coast of Puerto Rico and eight of nine populations along the northern coast of Puerto Rico, particularly on privately owned lands throughout the range of the species. In addition, habitat destruction and modification are occurring within the species' range in Hispaniola. Habitat encroachment by invasive plant species and habitat fragmentation caused by harvesting of timber for fence posts and maintaining rights-of-way are also considered to be further stressors to the viability of the palo de rosa across its range. Changes in climatic conditions are expected to result in more intense hurricanes and extended periods of drought under RCPs 4.5 and 8.5, but the effect of these changes on the palo de rosa is unknown. The expected changes in climatic conditions will affect all palo de rosa populations uniformly across the range of the species. Lastly, palo de rosa populations across the range experience low recruitment rates, slow growth, and limited dispersal.

Overall, the threats to palo de rosa viability affect the species similarly across the range of the species. We found no concentration of threats and no other factors in any portion of the palo de rosa's range at a biologically meaningful scale that place the palo de rosa in that geographic area in danger of extinction. 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; however, we determine that the species is likely to become endangered 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 palo de rosa meets the Act's definition of a threatened species. Therefore, we are reclassifying the palo de rosa as a threatened species in accordance with sections 3(20) and 4(a)(1) of the Act.

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

Section 4(d) of the Act contains two sentences. The first sentence states that the Secretary shall issue such regulations as she deems necessary and advisable to provide for the conservation of species listed as threatened. The U.S. Supreme Court has noted that statutory language like ''necessary and advisable'' demonstrates a large degree of deference to the agency (see *Webster* v. *Doe,* 486 U.S. 592 (1988)). Conservation is defined in the Act to mean the use of all methods and procedures that 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 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 of the Act.

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

In the early days of the Act, the Service published at 50 CFR 17.71 a general protective regulation that would apply to each threatened plant species, unless we were to promulgate a separate species-specific protective regulation for that species. In the wake of the court's *CBD* v. *Haaland* decision vacating a 2019 regulation that had made 50 CFR

17.71 inapplicable to any species listed as a threatened species after the effective date of the 2019 regulation, the general protective regulation applies to all threatened species, unless we adopt a species-specific protective regulation. As explained below, we are adopting a species-specific rule that sets out all of the protections and prohibitions applicable to palo de rosa.

Provisions of the 4(d) Rule

Exercising the Secretary's authority under section 4(d) of the Act, we have developed a species-specific rule that is designed to address the palo de rosa's specific threats and conservation needs. As discussed above under Summary of Biological Status and Threats, we have concluded that the palo de rosa is likely to become endangered within the foreseeable future primarily due to habitat destruction and modification, particularly by urban development, right-of-way maintenance, rock quarries, and grazing. Additionally, other natural or manmade factors like hurricanes, invasive species, and landslides still threaten the species. The provisions of this 4(d) rule promote conservation of the palo de rosa by encouraging conservation programs for the species and its habitat and promoting additional research to inform future habitat management and recovery actions for the species. Section 4(d) requires the Secretary to issue such regulations as she deems necessary and advisable to provide for the conservation of each threatened species and authorizes the Secretary to include among those protective regulations any of the prohibitions that section 9(a)(2) of the Act prescribes for endangered species. Our current regulations at 50 CFR 17.71 apply many of the prohibitions in section 9(a)(2) of the Act to all threatened plants, as clarified at 50 CFR 17.61. However, if we promulgate species-specific protective regulations for a given species, the species-specific regulations replace 50 CFR 17.71. We find that the protections, prohibitions, and exceptions in this rule as a whole satisfy the requirement in section 4(d) of the Act to issue regulations deemed necessary and advisable to provide for the conservation of the palo de rosa.

The protective regulations we are proposing for palo de rosa incorporate prohibitions from section 9(a)(2) to address the threats to the species. Section 9(a)(2) prohibits the following activities for endangered plants: importing or exporting; certain acts related to removing, damaging, and destroying; delivering, receiving, carrying, transporting, or shipping in interstate or foreign commerce in the course of commercial activity; or selling or offering for sale in interstate or foreign commerce.

As discussed above under Summary of Biological Status and Threats, the present or threatened destruction, modification, or curtailment of the species' habitat or range (specifically, urban development, maintenance of power lines and associated rights-of-way, infrastructure development, rock quarries, grazing by cattle, and extraction of fence posts), inadequacy of existing regulatory mechanisms, and other natural or manmade factors affecting the species' continued existence (specifically, hurricanes, invasive plant species, landslides, and habitat fragmentation and lack of connectivity between subpopulations) are affecting the status of the palo de rosa. A range of activities have the potential to impact this plant, including recreational and commercial activities. Regulating these activities will help preserve the species' remaining populations, slow their rate of potential decline, and decrease synergistic, negative effects from other stressors. As a whole, the regulation would help in the efforts to recover the species.

Despite these prohibitions regarding threatened species, we may under certain circumstances issue permits to carry out one or more otherwise-prohibited activities, including those described above. The regulations that govern permits for threatened plants state that the Director may issue a permit authorizing any activity otherwise prohibited with regard to threatened species (50 CFR 17.72). Those regulations also state that the permit shall be governed by the provisions of § 17.72 unless a special rule applicable to the plant is provided in §§ 17.73 to 17.78. Therefore, permits for threatened species are governed by the provisions of § 17.72 unless a species-specific 4(d) rule provides otherwise. We note that, although our recent revisions to § 17.71 had made the prohibitions in § 17.71(a) inapplicable to any plant listed as a threatened species after September 26, 2019, the general protective regulation at 50 CFR 17.71 now applies because of the court's decision vacating the 2019 regulations. We anticipate that permitting provisions would generally be similar or identical for most species, so applying the provisions of § 17.72 unless a species-specific 4(d) rule provides otherwise would likely avoid substantial duplication. Under 50 CFR 17.72 with regard to threatened plants, a permit may be issued for the following purposes: for scientific purposes, to enhance propagation or survival, for economic hardship, for botanical or horticultural exhibition, for educational purposes, or for other purposes consistent with the purposes and policy of the Act. Additional statutory exemptions from the prohibitions are found in sections 9 and 10 of the Act.

We recognize 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 Services in implementing all aspects of the Act. In this regard, section 6 of the Act provides that the Services shall cooperate to the maximum extent practicable with the States in carrying out programs authorized by the Act. Therefore, any qualified employee or agent of a State conservation agency that 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, would be able to conduct activities designed to conserve the palo de rosa that may result in otherwise prohibited activities without additional authorization.

Once the palo de rosa was federally listed, legal protection was extended by virtue of an existing cooperative agreement (under section 6 of the Act) with the Commonwealth of Puerto Rico. Therefore, this provision will work in concert with the cooperative agreement to ensure that conservation actions conducted by employees or agents of the Commonwealth are not prohibited.

We also recognize 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. We intend 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 a statement that the seeds are of ''cultivated origin'' accompanies the seeds or their container.

Nothing in this 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 our ability to enter into partnerships for the management and protection of the palo de rosa. However, interagency cooperation may be further streamlined through planned programmatic consultations for the species between us and other Federal agencies, where appropriate.

Required Determinations

National Environmental Policy Act

We have determined that environmental assessments and environmental impact statements, as defined in the National Environmental Policy Act of 1969 (*42 U.S.C. 4321 et seq.*), need not be prepared in connection with determining a species' listing status under the Endangered Species Act. We published a notice outlining our reasons for this determination in the **Federal Register** on October 25, 1983 (48 FR 49244). We also determine that 4(d) rules that accompany regulations adopted pursuant to section 4(a) of the Act are not subject to the National Environmental Policy Act.

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

References Cited

A complete list of references cited is available on *https://www.regulations.gov* under Docket Number FWS–R4–ES–2020–0059 and upon request form the Caribbean Ecological Services Field Office (see **FOR FURTHER INFORMATION CONTACT**).

Authors

The primary authors of this document are staff members of the Caribbean Ecological Services Field Office.

List of Subjects in 50 CFR Part 17

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

Regulation Promulgation

Accordingly, we hereby 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.

■ Amend § 17.12 in paragraph (h) by revising the entry ''Ottoschulzia rhodoxylon'' 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				
*	*	*	*	*
Ottoschulzia rhodoxylon	Palo de rosa	Wherever found	T	55 FR 13488, 4/10/1990; 87 FR [Insert **Federal Register** page where the document begins], 11/4/2022; 50 CFR 17.73(g). [4d]
*	*	*	*	*

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

§ 17.73 Special rules—flowering plants.

* * * * *

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

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

(ii) Remove and reduce to possession the species from areas under Federal jurisdiction; maliciously damage or destroy the species on any such area; or remove, cut, dig up, or damage or destroy the species on any other area in knowing violation of any law or regulation of any State or in the course of any violation of a State criminal trespass law.

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

(iv) Sale or offer for sale, as set forth at § 17.61(e) for endangered plants.

(2) *Exceptions from prohibitions.* In regard to *Ottoschulzia rhodoxylon* (palo de rosa), you may:

(i) Conduct activities, including activities prohibited under paragraph (f)(1) of this section, if they are authorized by a permit issued in accordance with the provisions set forth at § 17.72.

(ii) Remove and reduce to possession from areas under Federal jurisdiction, as set forth at § 17.71(b).

(iii) Engage in any act prohibited under paragraph (g)(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.

Martha Williams,

Director, U.S. Fish and Wildlife Service.

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