

***Callicarpa ampla, Ilex sintenisii, Styrax portoricensis, Ternstroemia luquillensis and Ternstroemia subsessilis* Recovery Plan**

U.S. Fish and Wildlife Service (USFWS). 1995. *Callicarpa ampla, Ilex sintenisii, Styrax portoricensis, Ternstroemia luquillensis and Ternstroemia subsessilis* Recovery Plan. Prepared by Eugenio Santiago-Valentín and Marelisa Rivera for U.S Fish and Wildlife Service, Atlanta, Georgia. 25pp.

**Original Approved:** July 31, 1995

**Original Prepared by:** Eugenio Santiago-Valentín and Marelisa Rivera

**AMENDMENT 1**

We have identified best available information that indicates the need to amend recovery criteria for *Callicarpa ampla, Ilex sintenisii, Styrax portoricensis, Ternstroemia luquillensis and Ternstroemia subsessilis* since the recovery plan was completed. In this modification, we synthesize currently available information, identify amended recovery criteria, and present the rationale supporting the recovery plan modification. The modification is shown as an addendum that supplements the recovery plan, superseding only Part II A (page 10) of the recovery plan. Recovery plans are a non-regulatory document that provides guidance on how best to help recover the species.

**For  
U.S. Fish and Wildlife Service  
Atlanta, Georgia**

**Approved:** \_\_\_\_\_  
**Regional Director, U.S. Fish and Wildlife Service**

**Date:** \_\_\_\_\_

**METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT**

The amendments to the recovery criteria are based on the latest *Callicarpa ampla, Ilex sintenisii, Styrax portoricensis, Ternstroemia luquillensis and Ternstroemia subsessilis* 5-year Status Review (USFWS 2015), which collected the most recent information of the species. The information was analyzed by U.S. Fish and Wildlife Service (Service) biologists and managers in the Caribbean Ecological Services Field Office in order to develop the delisting criteria for these species.

**ADEQUACY OF RECOVERY CRITERIA**

Section 4(f)(1)(B)(ii) of the Endangered Species Act (Act) requires that each recovery plan shall incorporate, to the maximum extent practicable, “objective, measurable criteria which, when met,

would result in a determination...that the species be removed from the list.” Legal challenges to recovery plans (see *Fund for Animals v. Babbitt*, 903 F. Supp. 96 (D.D.C. 1995)) and a Government Accountability Audit (GAO 2006) also have affirmed the need to frame recovery criteria in terms of threats assessed under the five listing factors (ESA 4(a)(1)).

## Recovery Criteria

See previous version of criteria in *Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis* Recovery Plan on page 10.

## Synthesis

*Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis* were listed as endangered on August 22, 1992 (52 FR14782). Currently, all five shrubs or small trees are predominantly restricted to El Yunque National Forest (EYNF) in northeastern Puerto Rico. There are no recent surveys or population estimates available for any of these species.

*Callicarpa ampla* (capá rosa) was originally reported from Puerto Rico and St. Thomas, U.S. Virgin Islands. Currently, the St. Thomas' population seems to be extirpated, and the species is only known from the palo colorado forest association at EYNF (USFWS 2015). Fifteen individuals are known to exist at EYNF in addition to three individuals that were planted near the El Portal visitor center at this same forest. However, the species might occur outside EYNF (e.g., Carite and Guilarte Commonwealth Forests) because there is suitable habitat with similar characteristics as those found at EYNF (USFWS 2015).

*Ilex sintenisii* is known only from the dwarf forest type on higher elevations (over 600 meters (1,968 ft) in elevation) at EYNF. It is distributed between two peaks: Pico El Yunque and Pico del Este and along their access roads, where a total of 465 individuals have been reported at three sites (USFWS 2015). However, the species' prime habitat lies in inaccessible areas that have not been surveyed.

*Styrax portoricensis* (palo de jazmín) is an evergreen tree that was historically reported from Monte Guany in the municipality of Yabucoa and also on EYNF (USFWS 1995). Currently, palo de jazmín is only known to naturally occur within the palo colorado forest type at EYNF where 19 individuals have been documented at five locations (USFWS 2015). Palo de jazmín has been planted on other sites within EYNF, and in a land managed for conservation by Para La Naturaleza in the municipality of Barranquitas (USFWS 2015). However, this planted material showed a low survival rate as these plants were kept for a long time in pots (approximately 10 years), and consequently the trees had a poorly developed root system (Monsegur, 2018, pers. comm.).

*Ternstroemia luquillensis* (palo colorado) and *Ternstroemia subsessilis* (no common name) are tree species that occur on the palo colorado forest type, and the dwarf forest type at EYNF. Only six individuals of palo colorado, and 37 individuals of *T. subsessilis* are known, respectively at four sites each (no specific sites/areas are documented) at EYNF (USFWS 2015). Also, there is a

botanical voucher that reports the presence of palo colorado in the municipality of Maricao on the opposite side of the Island (interior west of Puerto Rico; USFWS 2015). However, no further information is known from this site.

Information gathered for these five species in the latest 5-year status review indicates that these trees continue to be affected by destruction and modification of habitat (Factor A). Available information indicates that although the majority of known individuals occur within EYNF, some of the populations are known to extend to the boundaries of EYNF or even on private lands outside this forest where residential development and road construction activities may threaten the species and their habitat (USFWS 2015). Also, the populations can be affected by maintenance and repair work to clear existing structures (e.g. towers and power lines) and access roads (e.g. landslides) within EYNF. However, the most significant threats to the species are in the form of natural or manmade factors (Factor E): climate change, hurricanes, landslides, small population numbers, lack of natural recruitment, and possibly low genetic diversity (USFWS 2015).

## AMENDED RECOVERY CRITERIA

Recovery criteria serve as objective, measurable guidelines to assist in determining when an endangered species has recovered to the point that it may be downlisted to threatened, or that the protections afforded by the Act are no longer necessary and *Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis* may be delisted. Delisting is the removal of a species from the Federal Lists of Endangered and Threatened Wildlife and Plants. Downlisting is the reclassification of a species from an endangered species to a threatened. The term “endangered species” means any species (species, sub-species, or DPS) which is in danger of extinction throughout all or a significant portion of its range. The term “threatened species” means any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Revisions to the Lists, including delisting or downlisting a species, must reflect determinations made in accordance with sections 4(a)(1) and 4(b) of the Act. Section 4(a)(1) requires that the Secretary determine whether a species is an endangered species or threatened species (or not) because of threats to the species. Section 4(b) of the Act requires that the determination be made “solely on the basis of the best scientific and commercial data available.” Thus, while recovery plans provide important guidance to the Service, States, and other partners on methods of minimizing threats to listed species and measurable objectives against which to measure progress towards recovery, they are guidance and not regulatory documents.

Recovery criteria should help indicate when we would anticipate that an analysis of the species’ status under section 4(a)(1) would result in a determination that the species is no longer an endangered species or threatened species. A decision to revise the status of or remove a species from the Federal Lists of Endangered and Threatened Wildlife and Plants, however, is ultimately based on an analysis of the best scientific and commercial data then available, regardless of whether that information differs from the recovery plan, which triggers rulemaking. When changing the status of a species, we first propose the action in the *Federal Register* to seek public comment and peer review, followed by a final decision announced in the *Federal Register*.

We provide new delisting criteria for *Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis*, which will supersede those included in its Recovery Plan. The recovery criteria presented below represent our best assessment of the conditions that would most likely result in a determination that delisting of *Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis* is warranted as the outcome of a formal five-factor analysis in a subsequent regulatory rulemaking. Achieving the prescribed recovery criteria is an indication that these species are no longer threatened or endangered, but this must be confirmed by a thorough analysis of the five factors.

#### **Amended Delisting Recovery Criteria:**

The amended delisting criteria for *Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis* are as follows:

1. Existing natural populations of *Callicarpa ampla* (5), *Ilex sintenisii* (3), *Styrax portoricensis* (5), *Ternstroemia luquillensis* (4) and *Ternstroemia subsessilis* (4) exhibit a stable or increasing trend, evidenced by natural recruitment, and multiple age classes (addresses Factors E).
2. Establish or discover four (4) additional populations each of *Callicarpa ampla*, *Styrax portoricensis*, *Ternstroemia luquillensis*, and *Ternstroemia subsessilis* within the current range at EYNF that exhibit a stable or increasing trend, evidenced by natural recruitment, and multiple age classes (addresses Factors A and E).
3. Establish or discover two (2) new populations each of *Callicarpa ampla*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis*, and *Ternstroemia subsessilis* outside the current range but within the historical range (e.g., Carite, Guilarte or Toro Negro Commonwealth Forests) that exhibit a stable or increasing trend, evidenced by natural recruitment, and multiple age classes (addresses Factors A and E).
4. Threats have been addressed and/or managed to the extent that the species will remain viable into the foreseeable future (addresses Factor A and E).

#### **Justification**

*Justification for criterion 1:* The enhancement of existing natural populations will improve resiliency by augmenting the number of individuals of each species to the level that they show a stable or increasing trend enabling them to withstand and rebound following stochastic events such as environmental disturbances (e.g., hurricanes and landslides). Also, by working with partners to propagate these species and augment existing small populations will also result in increased redundancy and representation to ensure their long-term survival in the wild. The progress of this recovery criterion will be measured by natural recruitment and presence of multiple age classes following the implementation of enhancement actions.

*Justification for criterion 2:* The establishment of four new populations of each species within their current range will result in increased resiliency and redundancy. The addition of four new

populations of each of the species will double the number of existing populations and thus, would increase their chances of withstanding catastrophic and stochastic events. Evidence of the progress of this criterion will be measured by natural recruitment and presence of multiple age classes following the implementation of actions.

*Justification for criterion 3:* Given that these species are currently found only at EYNF, and are prone to impacts from tropical storms and hurricanes, the establishment of two additional populations of all species outside their current range will increase their redundancy, hence their capacity to withstand catastrophic events such as hurricanes that could adversely affect multiple populations on the same restricted range. New populations outside the range will help safeguard the genetic representation of the populations and will help to maintain the adaptive diversity of the species. Evidence of the progress of this criterion will be measured by natural recruitment and presence of multiple age classes once new populations are established.

*Justification for criterion 4:* Ameliorating existing threats is essential for the recovery of these species since those threats are the factors leading to their endangered status. Therefore, in addition to the implementation of criteria 1-3, we can improve the viability of these species by implementing and establishing conservation mechanisms to protect the habitat on private lands, and, by using outreach to educate the public to avoid or reduce development impacts such as road repairs and maintenance within the EYNF.

### **Rationale for Amended Recovery Criteria**

The rationale for the recovery criteria is to enhance and establish self-sustaining populations within suitable protected habitats. All five species remain especially vulnerable to natural and manmade factors. *Styrax portoricensis*, *Callicarpa ampla*, *Ternstroemia luquillensis* and *Ternstroemia subsessilis* are particularly vulnerable due to the low number of populations and individuals (USFWS 2015), making most of these susceptible to catastrophic events (Factor E). In addition, these species along with *Ilex sintenisii* show a narrow distribution restricting their range and habitat to EYNF. Thus, to increase their long-term viability (representation, resiliency, and redundancy) we propose the enhancement of existing natural populations and the establishment of new populations for each of these species. We recommend establishing four new populations within the current range at EYNF to maintain the species genetic diversity in the wild and to increase the species resiliency and redundancy. Also, we propose to establish two new populations on other protected lands (e.g., Commonwealth forests) outside the current range to increase the species representation and alleviate the effects of any catastrophic events that may occur to the natural populations. We propose this action because EYNF has suffered from several recent extreme weather conditions, being hurricanes Irma and María (September 2017) the latest weather systems that severely affected the habitat. This is particularly important for *Ilex sintenisii*, as this species is restricted to dwarf forest habitat at the highest peaks of EYNF. Therefore, we anticipate *Ilex sintenisii* will be affected by the different climate change scenarios and the predicted shifts in life zones these changes can influence (Bhardwaj et al., 2018; Henareh Khalyani et al. 2016). By broadening the species distribution, increasing number of populations, and assuring new viable populations, we will increase the redundancy, representation, and resiliency of all five species. Recommended sites for new populations include Carite, Guilarte, and Toro Negro Commonwealth Forests since these forests share similar habitat characteristics

with EYNF.

Also, to address Factor A, we propose the planning and implementation of threat reduction activities such as long-term conservation mechanisms (e.g. land easements, conservation agreements) to protect and conserve habitat on private lands that have suitable habitat for these species.

### **ADDITIONAL SITE SPECIFIC RECOVERY ACTIONS**

1. Establish long-term conservation mechanisms (e.g., land conservation easements and conservation agreements) for private lands outside/bordering EYNF since these lands share similar vegetation and habitat characteristics. This new action should be included within Recovery Task 11.
2. A protocol for the propagation and reintroduction of all five species should be developed in collaboration with partners (e.g., University of Puerto Rico, KEW, Fairchild Tropical Botanic Garden, PRDNER, Para La Naturaleza and Natural Resources Conservation Service). The protocol should address the feasibility of seed banking these species, and if deemed necessary, seed material should be stored at the Millennium Seed Bank (KEW) and USDA National Laboratory for Genetic Resources Preservation in Ft. Collins. This new action should be included within Recovery Task 33.
3. Studies in the species' population genetics should be conducted to determined patterns of genetic diversity across the species natural distribution, and to provide baseline information for sound management of these species. This new action should be included within Recovery Task 3.

### **LITERATURE CITED**

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