

*Auerodendron pauciflorum*  
(no common name)

**5-Year Review:  
Summary and Evaluation**

**U.S. Fish and Wildlife Service  
Southeast Region  
Caribbean Ecological Services Field Office  
Boquerón, Puerto Rico**



**5-YEAR REVIEW**  
***Auerodendron pauciflorum* (no common name)**

**I. GENERAL INFORMATION**

- A. Methodology used to complete the review:** On February 20, 2009, the U.S. Fish and Wildlife Service (Service) published a notice in the *Federal Register* (74 FR 7914) announcing the 5-year review of the plant *Auerodendron pauciflorum*. The notice requested new information concerning the biology and status of the species and a 60-day public comment period was opened. However, no information on *Auerodendron pauciflorum* was received from the public during the comment period.

This 5-year review was prepared by a Service recovery biologist in the Caribbean Field Office and summarizes the best available information that the Service has gathered on the species. The sources of information used for this review included the original listing rule for the species, the recovery plan for the plant, distribution and status reports, and any published literature.

**B. Reviewers**

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**Lead Field Office:** Maritza Vargas, Caribbean Ecological Services Field Office, Boquerón, Puerto Rico. (787) 851-7297, extension 240.

**C. Background**

- 1. Federal Register Notice citation announcing initiation of this review:** February 20, 2009; 74 FR 7914.
- 2. Species Status:** 2010 Recovery Data Call: Unknown. The species was only known from 21 individuals in two privately-owned areas subject to pressure for residential/tourist and road development projects. Additional surveys are needed to update information on species' abundance and distribution. No individuals in reproductive status have been observed. No recent surveys have been conducted for the species and the current population numbers are not known.
- 3. Recovery Achieved 1** (1 = 0-25 % of species' recovery objectives achieved)
- 4. Listing History**

Original Listing

FR notice: 59 FR 9935

Date listed: March 2, 1994

Entity listed: species

Classification: endangered

**5. Review History:**

The March 2, 1994 Final Rule (59 FR 9935) and the Recovery Plan for *Auerodendron pauciflorum*, approved and signed on September 29, 1997 (USFWS, 1997) are the most comprehensive analysis of the species status and are used as the referenced point document for this 5-year review.

Every year the Service reviews species' status and incorporates the information in the Recovery Data Call. In the 2010 Recovery Data Call, we established that the status of the species was unknown.

Recovery Data Call: 1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, and 2010.

**6. Species' Recovery Priority Number at start of review (48 FR 43098):**

5. At the time of listing, *Auerodendron pauciflorum* was recognized as a species with a high degree of threat and low recovery potential.

**7. Recovery Plan:**

Name of plan: Recovery Plan for the *Myrcia paganii* and the *Auerodendron pauciflorum*

Date issued September 29, 1997.

## **II. Review Analysis**

### **A. Application of the 1996 Distinct Population Segment (DPS) policy**

**1. Is the species under review listed as a DPS?**

No. The Act defines species to include any distinct population segment of any species of vertebrate wildlife. This definition limits listings as distinct population segments (DPS) only to vertebrate species of fish and wildlife. Because the DPS policy is not applicable to this species, it is not addressed further in this review.

### **B. Recovery Criteria**

**1. Does the species have a final, approved recovery plan containing objective, measurable criteria?**

No. Although the species has an approved recovery plan, it does not establish measurable criteria to delist the species. The plan does not define the number of individuals per population needed for a sustainable population nor the amount of new populations that need to be established in protected areas.

## **2. Adequacy of recovery criteria**

### **a. Do the recovery criteria reflect the best available (most up-to-date) information on the biology of the species and its habitat?**

There have been no new studies conducted on *Auerodendron pauciflorum* since 1996. At present, we do not know if the species is stable, increasing or decreasing in its only population. Current studies are needed to evaluate *Auerodendron pauciflorum*. New information will lead us to a better understanding of the species and its requirements at present time and thus provide beneficial input towards the recovery of the species.

### **b. Are all of the 5 listing factors that are relevant to the species addressed in the recovery criteria (and there is no new information to consider regarding existing or new threat)?**

No.

## **3. List the recovery criteria as they appear in the recovery plan, and discuss how each criterion has or has not been met, citing information. For threats-related recovery criteria, please note which of the 5 listing factors are addressed by that criterion. If any of the 5-listing factors are not relevant to this species, please note that here.**

The recovery plan specifies that *Auerodendron pauciflorum* may be considered for delisting when:

1. Populations on privately owned land area placed under protective status.
2. New populations (the number of which should be determined following the appropriate studies) of each species, capable of self-perpetuation, have been established within protected areas, such as the Guajataca Commonwealth Forest, the Cambalache Commonwealth Forest, or the Río Abajo Commonwealth Forest.

Criterion 1 has not been met. Currently, the privately owned lands where this plant occurs do not have any protective status.

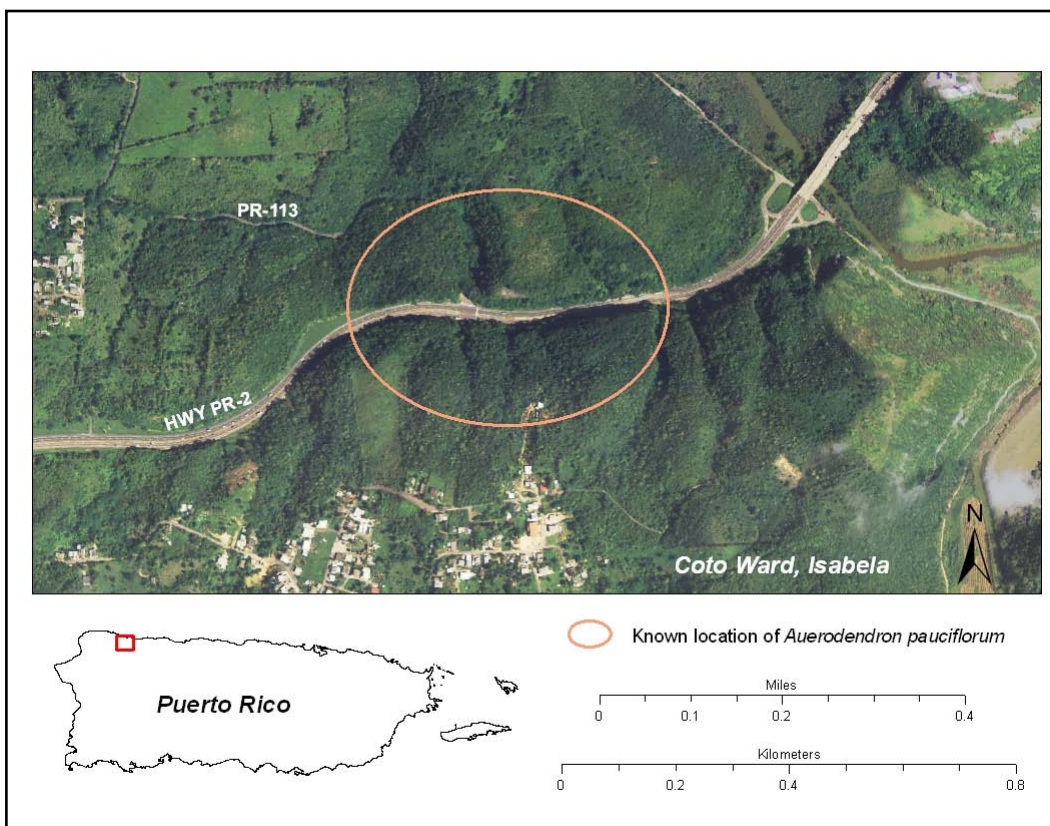
Criterion 2 has not been initiated. The species has not been observed in reproductive status. Fruits have not been described and seedlings have not been observed in the field. Propagation techniques for the species have not been developed.

## C. Updated Information and Current Species Status

### 1. Biology and Habitat

*Auerodendron pauciflorum* (no common name) is a shrub currently known only from the limestone hill region on the northern karst of Puerto Rico. It belongs to the Rhamnaceae family and is endemic to Puerto Rico (Lioger 1994). *Auerodendron pauciflorum* individuals are found within the subtropical moist forest life zone (Ewel and Whitmore 1973). The species was federally listed in 1994 as endangered and was found in one locality in Coto Ward in the municipality of Isabela. The recovery plan for the species was signed in 1997 and reported an approximate number of 21 individuals in one locality (Figure 1)

Figure 1. Location of known population of *Auerodendron pauciflorum* in the municipality of Isabela, Puerto Rico.



- a. Is there relevant new information regarding the species' abundance, population trends (e.g. increasing, decreasing, stable), demographic features (e.g. age structure, sex ratio, family size, birth rate, age at mortality, mortality rate, etc.), or demographic trends? No.
- b. Is there relevant new information regarding the species' genetics, genetic variation, or trends in genetic variation (e.g., loss of genetic variation, genetic drift, inbreeding, etc.)? No.

- c. **Is there relevant new information regarding taxonomic classification or changes in nomenclature?** No.
- d. **Is there relevant new information regarding the species' spatial distribution, trends in spatial distribution (e.g., increasingly fragmented, increased numbers of corridors, etc.), or historic range (e.g., corrections to the historical range, change in distribution of the species within its historic range, etc.)?** No.
- e. **Is there relevant new information addressing habitat or ecosystem conditions (e.g., amount, distribution, and suitability of the habitat or ecosystem)?** No.

**2. Five Factor Analysis (threats, conservation measures, and regulatory mechanisms)**

**(a) Present or threatened destruction, modification, or curtailment of its habitat or range;**

In the final rule, the Service identified habitat destruction and modification as a factor affecting the species.

The fact that only one fragmented population of *Auerodendron pauciflorum* occurs on privately-owned land is a concern for the Service. This site is located in the Coto Ward of Isabela, an area threatened with commercial, residential and tourist development projects. During the last decade, the Service has reviewed numerous projects in the northern karst region of Puerto Rico, where the only known population of *Auerodendron pauciflorum* is known to exist. We have provided technical assistance to the Puerto Rico Highway Authority for the expansion of the Highway PR-22 from Hatillo to Aguadilla to minimize possible adverse effects to *Auerodendron pauciflorum* and several other species. The currently proposed route (the preferred alternative) is located south of the existing population of *Auerodendron pauciflorum*, where adverse effects are not anticipated for the species. However, if the preferred route is not selected, the proposed highway may affect the species restricting more of its habitat or eliminating the entire population. In addition, indirect effects related to commercial, residential and tourist development associated with the road may affect the species and its habitat.

Currently, road PR-113 already divides the principal population of *Auerodendron pauciflorum*. The numerous residential and tourist development projects proposed in the area may result in a higher demand for bigger roads to support the increased traffic in the area.

*Auerodendron pauciflorum* remains threatened by habitat modification or destruction because of the development pressure for tourist and residential projects as well as roads and/or highways in the area.

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

At present time, the Service is not aware of any utilization of this species for commercial, recreational, educational, or scientific purposes in Puerto Rico. Therefore, overutilization is not considered a threat.

**(c) Disease or predation;**

At present time, the Service is not aware of any disease or predation of this species. Therefore, we do consider disease or predation to be a threat at this time.

**(d) Inadequacy of existing regulatory mechanisms; and**

At the time of listing, laws and regulations of the Commonwealth of Puerto Rico did not protect *Auerodendron pauciflorum*. At present time, local laws and regulations protect the species. In 1999, the Commonwealth of Puerto Rico approved the Law # 241 known as the “Nueva Ley de Vida Silvestre de Puerto Rico” (New Wildlife Law of Puerto Rico). The purpose of this law is to protect, conserve and enhance both native and migratory wildlife species: declare property of Puerto Rico all wildlife species within its jurisdiction, regulate permits, regulate hunting activities, and regulate exotic species among others. The Puerto Rico Department of Natural and Environmental Resources approved in 2004 the “Reglamento para Regir el Manejo de las Especies Vulnerables y en Peligro de Extinción en el Estado Libre Asociado de Puerto Rico” (Regulation 6766 to regulate the management of threatened and endangered species in the Commonwealth of Puerto Rico). In this Regulation, the *Auerodendron pauciflorum* is designated as “critically endangered” by the DNER, which means that the species faces an extremely high risk of extinction in the near future. Regulation 6766 under Article 2.06 prohibits collecting, cutting, removing, among other activities, listed plant individuals within the jurisdiction of Puerto Rico.

Based on the presence of Federal and Commonwealth laws and regulations protecting *Auerodendron pauciflorum*, and the absence of evidence supporting lack of enforcement of regulations to protect this species, we believe that inadequacy of existing regulatory mechanisms is not a threat to this species at this time.

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

At the time of listing, limited distribution of the species was also identified as another factor affecting *Auerodendron pauciflorum*.

Currently, the best available information show that a single colony of approximately 21 individuals occurs in private land. Its fruits have not been described and seedlings have not been observed in the field.

In rare species like *Auerodendron pauciflorum*, genetic variation is very important because the loss of genetic variation can reduce the ability of the species to adapt to environmental changes. In addition, it may increase the susceptibility to diseases and pests. In addition, the limited number of individuals and its limited distribution is a threat

for the species because any disturbance by human interaction or a natural disaster like a hurricane can eliminate the only known population.

Based on the extremely limited distribution, low number of individuals, and the lack of individuals in reproductive status reported, we consider other natural or manmade factors a threat to the species.

### **3. Synthesis**

*Auerodendron pauciflorum* is a federally listed endangered species. It belongs to the family Rhamnaceae and is endemic to Puerto Rico. An estimated 21 individuals in a single population are found in the municipality of Isabela. At present time, its fruit has not been described and seedlings have not been observed in the field, hence making propagation efforts difficult. In the 2010 Recovery Data Call, we established that the current status of the species is unknown. Although the Service conducted a literature search, we did not locate any new information on the species. We also did not receive any new information from peer reviewers or the public during the open public comment period.

We believe that *Auerodendron pauciflorum* still meets the definition of an endangered species. The species is threatened by habitat destruction or modification because there are several proposed developments in the area (tourism and residential projects) including the construction of a major highway that could possibly impact or eliminate the only known population. In addition, the extremely low number of individuals and its limited distribution threaten the species.

## **III. RESULTS**

### **A. Recommended Classification:**

  X   No, no change is needed.

### **B. New Recovery Priority Number: 5c**

*Auerodendron pauciflorum* remains subject to a high degree of threat due to development pressure of the area for tourism and residential projects and construction of roads and/or highways. The species' recovery potential continues to be low because there are no reports on individuals in reproductive status (no documentation on fruits nor seeds for this specie). The conflict category 'c' has been added to the recovery priority number because the species may be completely eliminated by development.



#### IV. RECOMMENDATIONS FOR FUTURE ACTIONS

- Surveys should be conducted to establish the actual status of the species. New information will lead us to better knowledge of the species and its requirements and thus provide beneficial information towards the recovery of the species.
- The Service, in cooperation with DNER and academia, needs to determine how many individuals constitute a self-sustainable population.
- Efforts to protect privately-owned populations should be started to reduce habitat deterioration and maintain habitat or promote sustainable land use practices. Private-lands initiatives (such as Partners for Fish and Wildlife and Coastal Program) are needed to further protect the area where *Auerodendron pauciflorum* is known to occur naturally.
- Foster a working partnership with regulatory agencies to address and minimize potential adverse effects of development projects on the species and its habitat.
- Monitor *Auerodendron pauciflorum* to see if we encounter the species in reproduction and try to propagate the species.
- Develop and learn other propagation techniques to ensure the continued survival of the species and complement the existing population.

#### V. REFERENCES

- Ewel, J.J. and J.L. Whitmore. 1973. The ecological life zones of Puerto Rico and the U.S. Virgin Islands. Forest Service Research Pap. ITF-8, USDA. 72 pp.
- Lioger, H.A. 1994. Descriptive Flora of Puerto Rico and Adjacent Islands- Spermatophyta. Volume III Cyrillaceae to Myrtaceae. Editorial de la Universidad de Puerto Rico. 461 p.
- U.S. Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for the Plant *Auerodendron pauciflorum*. Federal Register Vol. 59 FR 9935.
- U.S. Fish and Wildlife Service. 1997. Recovery Plan for the *Myrcia paganii* and *Auerodendron pauciflorum*. Atlanta, Georgia. 17 pp.

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**U.S. FISH AND WILDLIFE SERVICE**  
**5-YEAR REVIEW of *Auerodendron pauciflorum***

**Current Classification**     Endangered

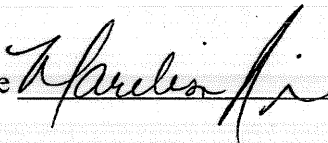
**Recommendation resulting from the 5-Year Review**

☐ **Downlist to Threatened**  
☐ **Uplist to Endangered**  
☐ **Delist**  
☒ **No change is needed**

**Review Conducted By**     Maritza Vargas, Caribbean Field Office, Boquerón, Puerto Rico


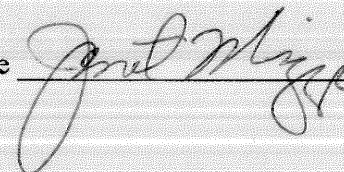
**FIELD OFFICE APPROVAL:**

**Lead Field Supervisor, U.S. Fish and Wildlife Service**

Approve      Date 8/1/2011

**REGIONAL OFFICE APPROVAL:**

**Lead Regional Director, Fish and Wildlife Service**

 Approve      Date 8/27/11