

*Cranichis ricartii*  
(no common name)

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



**April 2022**

**U.S. Fish and Wildlife Service  
South Atlantic-Gulf Region  
Caribbean Ecological Services Field Office  
Boquerón, Puerto Rico**

**U.S. FISH AND WILDLIFE SERVICE**  
**5-Year Status Review of *Cranichis ricartii* (no common name)**

**I. GENERAL INFORMATION**

**A. Methodology used to complete the review**

In accordance with section 4(c)(2) of the Endangered Species Act of 1973, as amended (Act), the purpose of a status review is to assess each threatened species or endangered species to determine whether its status has changed and if it should be classified differently or removed from the Lists of Threatened and Endangered Wildlife and Plants. The U.S. Fish and Wildlife Service (Service) evaluated the biology, habitat, and threats of the *Cranichis ricartii* (no common name) to inform this status review. On June 23, 2021, the Service published a notice in the Federal Register (86 FR 32965) announcing the 5-year status review and opening a 60-day public comment period for *C. ricartii*. The notice requested new information and comments concerning the species' biology and status. No comments were received from the public. The primary sources of information used in this analysis were unpublished reports and personal communication with recognized species expert.

**B. Reviewers**

**Lead Region:** Carrie Straight, South Atlantic-Gulf and Mississippi Basin Region, Atlanta, GA (404) 679-7226.

**Lead Field Office:** José G. Martínez, Caribbean Ecological Services Field Office, Boquerón, Puerto Rico. jose\_martinez@fws.gov

**C. Background**

**1. Federal Register Notice Citation Announcing Initiation of this Review:**

June 23, 2021; 86 FR 32965

**2. Review History:**

The most recent evaluation of *Cranichis ricartii* is the 2016 5-year status review, which recommended that the species continued to be classified as endangered (Service 2016).

**3. Species' Recovery Priority Number at start of review (48 FR 43098): 11.**

Indicating that the species has a moderate degree of threats and low recovery potential.

**4. Recovery Plan:**

Name of Plan: *Lepanthes eltoroensis* and *Cranichis ricartii* Recovery Plan

Date issued: Date July 15, 1996 (Service 1996)

Amendment: *Cranichis ricartii* Recovery Plan Amendment

Date issued: September 24, 2019 (Service 2019)

## II. REVIEW ANALYSIS

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

The Act defines species as including any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate wildlife. For plants add the language. This definition limits listing DPSs to only vertebrate species of fish and wildlife. Because the species under review is a plant, the DPS policy is not applicable.

### B. Recovery Criteria

The Amended Recovery Plan (Service 2019) establishes that *C. ricartii* could be considered for delisting when the following three criteria are met:

1. The existing population (1) of *Cranichis ricartii* within the Maricao Commonwealth Forest shows a stable or increasing trend, evidenced by natural recruitment, and multiple age classes (addresses Factors A and E).
2. Establish or discover four (4) additional populations that show a stable or increasing trend, evidenced by natural recruitment, and multiple age classes (addresses Factors A and E).
3. Threat reduction and management activities have been implemented to a degree that the species will remain viable into the foreseeable future (addresses Factors A and E).

None of these delisting criteria have been fully met.

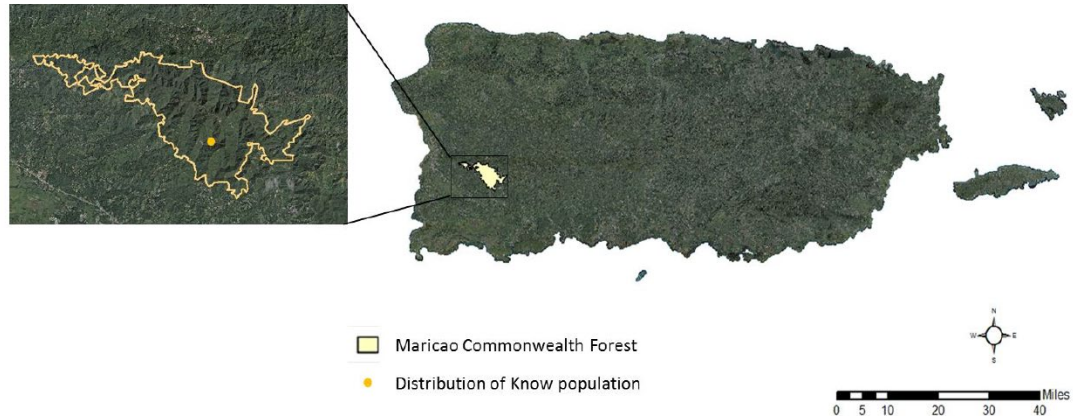
### C. Update information and current species status

#### 1. Biology and Habitat

**Species abundance, demographics, and spatial distribution.** At the time of listing, *C. ricartii* was considered endemic to Puerto Rico; but now this orchid is considered as endemic to the Antilles (Cuba, Dominican Republic, Puerto Rico and Guadalupe) (Ackerman 2014). Nevertheless, Ackerman (2014) indicated that the species is rare throughout its entire distribution. The Service does not have specific information about the status of the species or conditions of its habitat in areas outside of Puerto Rico.

At the time the 2016 5-year status review was completed, a total of five individuals of *C. ricartii* were documented in a slope near a cliff at the Alto del Descanso adjacent to State Road PR-120 in Maricao Commonwealth Forest (MCF), three of them with flowers (Service 2015). Despite the absence of systematic and continuous surveys, Service biologists have observed some of the individuals in this population with flowers over the past years during sporadic visits to the MCF (O. Monsegur 2021, pers. obs.). We recognize that *C. ricartii* likely remains in a dormant state until appropriate conditions allow its sprouting. This behavior minimizes the likelihood of being found and may result in individuals or even small clusters to be overlooked.

However, efforts in the past to assess the species indicate that it is likely extremely rare on the landscape. At the time of this review, we believe that *C. ricartii* in Puerto Rico is still limited to an isolated area of approximately 0.15 acres at Alto del Descanso (Figure 1). The largest number of individuals documented at any given point has been five.



**Figure 1.** Distribution of known population at Alto del Descanso in the Maricao Commonwealth Forest.

**Taxonomy.** No new information regarding taxonomic classification or changes in nomenclature was found during this review for *C. ricartii*. The Integrated Taxonomic Information System still recognizes this as a valid, accepted species (ITIS 2022) and the Service still considers the species a valid entity.

## 2. Five Factor Analysis

The status of a species is determined from an assessment of factors specified in section 4 (a)(1) of the Act. A summary of this assessment is detailed below. The threats to the species described in the 2016 5-year status review continue to impact the species (Service 2016). *Cranichis ricartii* is known to occur in an isolated area in Puerto Rico, but it is also known to occur in the Dominican Republic, Cuba, and Guadalupe (Ackerman 2014). The Service has limited information about the threats to the species outside of Puerto Rico. In general, most threats discussed below likely impact the species range-wide to some degree or another and where we have additional information, we include it below.

### a. Present or threatened destruction, modification or curtailment of its habitat or range.

In Puerto Rico, the *C. ricartii* population occurs in protected land. Thus, it not expected to be affected by direct habitat destruction or modification from human use (Service 2016). The close proximity of the species to the Alto del Descanso trail and State Road PR-120 increases the chance of direct and indirect impacts from maintenance of those areas (Service 2016, 2019). Areas adjacent to roadways can be used for fill material for repair and construction, as seen historically in the area where this species occurs. These areas can also be used for equipment storage during roadwork. Additional habitat modification threats are

addressed below in the discussion of Factor E (Other natural or manmade factors affecting its continued existence), which addresses habitat destruction related to climate-related events (e.g., landslides and hurricanes).

**b. Overutilization for commercial, recreational.**

Currently, we have no information indicating that overutilization for commercial, recreational, scientific, or educational purposes is occurring, thus, we continue to consider this factor is not a threat to *C. ricartii*. The small size, limited above ground stages likely reduces the risk of recreational collection or poaching of this species.

**c. Disease and predation**

As in the 2016 5-year status review, this factor is still not identified as a threat to the species.

**d. Inadequacy of existing regulatory mechanisms its continued existence.**

*Cranichis ricartii* is included in the list of protected species of Regulation 6766 and designated as critically endangered. Article 2.06 of Regulation 6766 prohibits collecting, cutting, removing, among other activities, listed plant individuals within the jurisdiction of Puerto Rico. Additionally, Commonwealth regulations prohibit collection of plants, including listed species, in Commonwealth Forests (see Service 2016 for additional details). Based on the presence of Commonwealth and Federal laws and regulations protecting this species, and the fact the *C. ricartii* is only known to occur within the MCF, we do not consider the inadequacy of existing regulatory mechanisms as a threat to the species in Puerto Rico.

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

The natural stressors to the species continue to be the same as described in the 2016 5-year status for *C. ricartii* (Service 2016), including low reproductive capacity, exotic species, climate change, tropical storms and landslides.

Low Reproductive Capacity. Orchid biology is unique in that for successful germination, a seed must be dispersed to a suitable habitat and substrate, and then come into contact with appropriate mycorrhizal fungi in the soil, which provides the necessary energy to germinate (Ackerman 1992). Given the limited number of individuals, even in areas where the species occurs, it reveals the limited knowledge we have on the reproductive capacity of *C. ricartii* and suspect its potential to naturally recruit.

Exotic Species. The presence of the exotic Caribbean pine (*Pinus caribaea*) at the site *C. ricartii* is found continues to be a significant threat to the species. Pine seedlings were already establishing in the area and colonizing the native forest. This species is expected to form a dense bed of leaf (needle) litter that modifies the *C. ricartii* habitat and could prevent the species from naturally dispersing. Some studies in tropical forest have concluded that the effects and impacts of

introduced pine trees deplete nutrients from upper mineral soil layers and that nitrogen mineralization is generally decreased because of increased acidity when pine leaves decomposed (Scholes and Nowicki 1998, Simberloff et al. 2010). Additionally, soil and nutrient changes in turn lead to great changes in the soil organism community (Scholes and Nowicki 1998), which could change the mycorrhizal community that the orchid relies on for survival. Furthermore, exotic pine trees grow fast and form dense monocultures over extensive areas of land, displacing native vegetation and altering hydrology, nutrient cycling, and fire regimes (Simberloff et al. 2010).

Fire Risk. The altered fire regimes caused by changes in the native plant community and drought (see below) can spread into native vegetation that may not be fire-adapted (Simberloff et al. 2010). In Puerto Rico, the native plant community is not fire-adapted (Robbins et al. 2008); hence, human induced fires or fire intensity/location that are not typical in history affect this the species and its habitat. Therefore, any fire event within Alto del Descanso at the MCF could be catastrophic and represent a high risk for the extirpation of the only known *C. ricartii* population.

Seeking to ameliorate the risks of fires at the MCF, in 2017, the Service in collaboration with PRDNER and the U.S. Forest Service removed approximately 24 Caribbean pines along the Alto del Descanso trail (O. Monsegur 2017, pers. obs.). Despite that all adults pine trees being removed, some pine seedlings are establishing and continue growing within Alto del Descanso and continue to impact the species.

Climate Impacts: Landslides, Hurricanes, Drought. The geographic location of Puerto Rico in the Caribbean makes the Island prone to impacts from hurricanes and tropical storms (Wiley and Wunderle 1993, Van Bloem and Martin 2021). Historically, hurricanes are more frequent in Puerto Rico's northeastern quadrant (White et al. 2014), sparing the western side of Puerto Rico, where MCF is located. However, Hurricane Georges struck MCF in 1998 and caused extensive damage, which previously had been spared from hurricanes since 1932 (Tossas 2006, Van Bloem and Martin 2021). In 2017, two major hurricanes (i.e., Irma and Maria) struck Puerto Rico, severely affecting forested vegetation throughout the entire Island (Feng et al. 2018). Despite the damage of these hurricanes, we believe management actions such as removal of exotics pines proved successful because there was reduced damage to the native forest structure from fallen trees during Hurricane Maria, and some *C. ricartii* individuals were observed flowering in January 2018 (O. Monsegur 2018, pers. obs.). Modelling predicts that extreme weather events, including extreme hurricanes like those seen in 2017, and changes in overall weather patterns (e.g., decreases in mean precipitation and increases in heat) are likely to continue (Intergovernmental Panel on Climate Change [IPCC] 2021). These extreme weather events may increase large rainfall events and landslide occurrences. As part of this assessment, temperatures are also expected to rise (IPCC 2021). Changes in general climate could lead to changes in the

vegetative community and could also increase risk of occurrences, spread, and severity of wildfires.

Although changes in climate are expected in the future, we are unsure how this species will respond to those changes. However, since there is only a single known locality of the species in Puerto Rico with very few individuals, the combination of those threats with the limited reproductive capacity of *C. ricartii*, it is uncertain if the species will be able to cope with climate threats. Thus, we consider threats under Factor E can still have a significant impact on the species now and into the future.

#### **A. Synthesis**

*Cranichis ricartii* is a small terrestrial orchid endemic to Puerto Rico, Dominican Republic, Cuba, and Guadalupe. The currently known population of *C. ricartii* in Puerto Rico is restricted to a very small, single locality within the MCF. Currently, the Service does not have additional information regarding the status of the species in Dominican Republic, Cuba, and Guadalupe. In Puerto Rico, the species has a low reproductive capacity as evidenced by the very low number of individuals documented in the area where it occurs, and the very specific life history needs for seed germination. In Puerto Rico, *C. ricartii* continues to be threatened by habitat modification from potential maintenance and disturbances associated the Alto del Descanso trail and State Road PR-120 within the MCF. Low population numbers (single known population) with limited number of individual plants (5 maximum documented), limited reproductive capacity, stochastic events (e.g., landslides, hurricanes, fallen trees, fire) and exotic plant species (i.e., pine trees) can also compromise the future viability of *C. ricartii*. Thus, the Service considers that *C. ricartii* still meets the definition of an endangered species.

### **III. RESULTS**

#### **Recommended Classification:**

  X   No change is needed

### **IV. RECOMMENDATIONS FOR FUTURE ACTIVITIES**

Research activities identified in the 2016 5-year review are still needed, including assessing the status of the species throughout its known range. Also, installing signage to avoid habitat disturbance near the species location will help with its protection. In addition, the MCF manager should communicate with the municipality of Maricao and make them aware of the presence the species near State road PR-120 and provide measures for tis protection during road maintenance work.

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**U.S. FISH AND WILDLIFE SERVICE  
5-YEAR REVIEW of *Cranichis ricartii***

**Current Classification:** Endangered

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

**No change needed**

**Review Conducted By:** José G. Martínez, Caribbean Ecological Services Field Office,  
Boquerón, Puerto Rico.

**APPROVALS/SIGNATURES**

**FIELD OFFICE APPROVAL\***

Field Supervisor, Caribbean Ecological Services Fish and Wildlife Service

Approve \_\_\_\_\_ Date \_\_\_\_\_

\*In 2014, Southeast Region Field Supervisors have been delegated authority to approve 5-year reviews that do not recommend a status change.