Lepanthes eltoroensis and *Cranichis ricartii* Recovery Plan

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DRAFT AMENDMENT 1

This recovery plan amendment applies only to *Cranichis ricartii*. We have identified the best available information that indicates the need to amend recovery criteria for *Cranichis ricartii* (no common name) since the recovery plan was completed in 1996. In this proposed modification, we synthesize the currently available information, we identify amended recovery criteria, and provide the rationale supporting the proposed recovery plan modification. The proposed modification will be shown as an addendum that supplements the recovery plan for *C. ricartii*, superseding only Part II A page 8 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
Caribbean Ecological Service Field Office, Region 4
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METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

The proposed amendments to the recovery criteria are based on the latest 5-year status review (USFWS 2016) and the most recent studies on this species. This 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 the *C. ricartii*.

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.

Recovery Criteria

See previous version of criteria in ***Lepanthes eltoroensis* and *Cranichis ricartii* Recovery Plan** on page 8.

Synthesis

Cranichis ricartii is a small terrestrial orchid that measures up to 27 cm (10 in) tall (Ackerman 1989). Flowers are mostly green and the fruits grow an erect ellipsoidal capsule that shows only for a short period during late fall to early winter, which makes it less detectable (Ackerman 1995). The recovery plan indicates that *C. ricartii* was reported to be endemic to Puerto Rico, but now it is also known to occur in the Dominican Republic, Cuba, and Guadalupe, which considerably expands its distribution range (Ackerman 2014, USFWS 2016). However, the Service does not have information on current status of the species in these countries. In Puerto Rico, there is a report of 30 *C. ricartii* individuals within the Maricao Commonwealth Forest (MCF) (USFWS 1996, USFWS 2016). Cedeño-Maldonado and Breckon (1996) stated that *C. ricartii* was known from a single population, and that a second population had been eliminated in late 1995 by road construction. In 2015, Service biologists conducted a rapid assessment in an area known as Alto del Descanso and found five *C. ricartii* individuals (USFWS 2015). However, it is important to note that previous surveys suggest that *C. ricartii* is not found on the same site from year to year (USFWS 1996). This fluctuation may be related to the species' biology and its growth habits (USFWS 2016). This species remains in a dormant state until appropriate conditions allow sprouting, and it produces flowers simultaneously with other morphologically similar orchids between November and February, which can result in its misidentification (USFWS 2016). Furthermore, Ackerman (1992) stated that for successful germination, orchid seeds 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).

Cranichis ricartii was listed as endangered on November 29, 1991, (56 FR 60933) due to its restricted distribution, low reproductive capacity, and vulnerability to habitat destruction and hurricanes (USFWS 1991). The 2016 5-year status review determined that *C. ricartii* continues to be threatened by Factor A (present or threatened destruction, modification, or curtailment of its habitat or range) and Factor E (other natural or manmade factors affecting its continued existence) (USFWS 2016). Factor B (overutilization for commercial, recreational, scientific, or educational purposes) was considered a threat when *C. ricartii* was listed. However, the Service does not consider this Factor to be a current threat to the species. Factor C (disease or predation) and Factor D (inadequacy of existing regulatory mechanisms) were not threats to *C. ricartii* when listed and are not threats currently.

Cranichis ricartii is still threatened by its proximity to State road PR-120 where it was found in 2015 by Service biologists. This road runs along the ridge of the higher mountains of the MCF, in an area that has been historically used for the extraction of fill material (USFWS 2016). Potential damage to the species can occur as a result of road maintenance or enhancement activities (USFWS 2016). Nonetheless, Factor A is considered a low to moderate threat, since the habitat for the species is protected by Commonwealth laws and regulations. Also, Commonwealth forests are managed for conservation by the Puerto Rico Department of Natural and Environmental Resources (PRDNER) (PRDNER 2004).

As stated above, *C. ricartii* also is threatened by Factor E, including low reproductive capacity, exotic species, climate change and landslides (USFWS 2016). Serpentine soils are susceptible to landslides, and because of the location of the known *C. ricartii* population, landslides in the area

may affect the species or its habitat. In fact, during the 2015 site visit, Service biologists documented landslides close to the *C. ricartii* population although the landslides did not affect the species on that occasion (USFWS 2016). Furthermore, Service biologists also reported the exotic Honduran Pine (*Pinus caribaea*) was colonizing the prime habitat of *C. ricartii* at Alto del Descanso (USFWS 2015). This pine species poses a threat to *C. ricartii* as it forms dense beds of leaf litter that may modify the microhabitat necessary for the recruitment of *C. ricartii*. Moreover, the spreading of pine trees in the area may increase the risk of fires within the habitat, a disturbance that native vegetation is not adapted to. In 2017, an interagency effort was conducted to remove exotic pine trees from the locality of *C. ricartii* at Alto del Descanso, and it was determined that the potential to completely eradicate this exotic species in the area is a feasible option.

The limited knowledge of the reproductive capacity of *C. ricartii*, and the lack of data regarding its potential to naturally recruit, makes it difficult to predict the recovery of the species. Further studies are necessary to determine how many individuals are necessary to establish self-sustainable populations and guide propagation efforts. Moreover, we do not have information regarding threats in other countries where the species occurs.

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 *C. ricartii* 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 endangered to 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. 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 *C. ricartii*, which will supersede those included in its Recovery Plan (USFWS 1996). The recovery criteria presented below represent our best assessment of the conditions that would most likely result in a determination that delisting of *C. ricartii* 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 the species is 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 *C. ricartii* are as follows:

1. The existing population (1) of *C. ricartii* within 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).

Justification

Justification for criterion 1: Currently, there is only one known population of *C. ricartii*, with very few individuals. Moreover, available information indicates this species is affected by habitat modification activities, exotic species, climate change, landslides, and low reproductive capacity. Therefore, this criterion aims to enhance this population and its habitat in order to ameliorate the effects of current threats. This action will improve the species capacity to withstand and rebound from stochastic events such as environmental disturbances like hurricanes and associated habitat changes (e.g., reduced forest cover and landslides).

Justification for criterion 2: The second recovery criterion intends to expand the species' distribution by establishing new populations and thus, increase its representation and redundancy. Establishing new populations in a wider range, in an already protected habitat, will increase species' ability to withstand stochastic and catastrophic events (e.g., hurricanes and climate change). This will be met by developing a propagation protocol in order to establish new self-sustainable populations.

Justification for the criterion 3: Presently, the only known *C. ricartii* population is limited to a small patch of habitat where it is vulnerable to threats like habitat modification and competition with exotic plant species. The implementation of Best Management Practices at the MCF during

forest management activities will reduce impacts from habitat modification on *C. ricartii*. Also, the reduction of the exotic Honduran pine would significantly improve the status of the species by allowing recruitment and reducing the chances of fires. Eliminating or significantly reducing existing threats by conducting appropriate management activities are the key to the successful recovery of *C. ricartii*.

Rationale for Recovery Criteria

The currently known population of *C. ricartii* in Puerto Rico is restricted to a single locality within MCF. Although the species is in a protected area, this orchid is still threatened by habitat destruction and modification, low population numbers, stochastic events and exotic plant species (USFWS 2016). The recovery criteria have been designed to protect and manage the known population and to establish new self-sustainable populations. A mechanism to minimize habitat modification needs to be adopted by the government agencies that conduct or regulate work within the MCF. A site specific protocol needs to be developed and implemented in coordination with State and Federal agencies to ensure that maintenance along Alto del Descanso trail and State road PR-120 avoids affecting the *C. ricartii* population and its habitat (Factor A). The habitat of *C. ricartii* is relatively pristine and remains as one of the best examples of native forest over serpentine outcrop in Puerto Rico (USFWS 2015). Enhancing this habitat and continuing with exotic pine tree eradication efforts are important recovery actions to increase species viability (Factor E).

Unfortunately, little is known about the phenology, recruitment, and habitat requirements of *C. ricartii* (USFWS 2016). The peculiar growth habit of *C. ricartii*, which include its small, underground stage, and a short reproductive period, makes it very difficult to locate (USFWS 2016). Also, the seed viability and germination rates of the species are unknown. In this regard, *C. ricartii's* reproductive biology poses a challenge for its recovery and highlights the importance of protecting and enhancing the existing population to increase its viability (resiliency, representation, redundancy). Currently, the resiliency, redundancy and representation of *C. ricartii* are relativley low as the species is particularly vulnerable to stochastic and catastrophic events (e.g., landslides, extirpation due to road maintenance or enhancement activities). Therefore, establishing new populations on less vulnerable areas, and enhancing the known population of *C. ricartii* would increase its viability. We expect that establishing at least four (4) new populations in suitable habitat would increase the species' viability, thus sustaining populations in the wild over time. Moreover, efforts toward searching for new populations of *C. ricartii* on potential habitat should be a priority action and surveys should focus on the period when the species is in flower (November to February). As new information becomes available, and when the individuals are reported, a propagation protocol should be developed for the species in order to propagate the species and establish new self-sustainable populations in protected areas. Furthermore, long-term management and monitoring of natural and established populations are needed to increase *C. ricartii* persistence.

ADDITIONAL SITE SPECIFIC RECOVERY ACTIONS

- Develop a long-term management and monitoring protocol for natural and established populations to reduce site-specific threats for *C. ricartii* and its habitat. These recovery

actions should be coordinated with PRDNER and be included within Task 113: *Monitor known populations* of the approved recovery plan.

- Research should be conducted on the potential factors that affect *C. ricartii* recruitment in the wild in order to assess the need for other actions to enhance recruitment. This new action should be included within Task 3: *Conduct research*.

- Develop a protocol for the propagation and reintroduction of *C. ricartii* in collaboration with partners. The protocol should address the need for long-term seed banking. This revised action supplements Task 4: *Establish of new populations*.

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