Ilex cookii and *Cyathea dryopteroides* Recovery Plan

Original Approved: January 31, 1991
Original Prepared by: U.S. Fish and Wildlife Service

DRAFT AMENDMENT 1

We have identified the best available information that indicates the need to amend recovery criteria for *Cyathea dryopterodes* (elfin tree fern) and *Ilex cookii* (Cook's holly) since the recovery plan was completed. 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 (USFWS 1991), superseding only Part II A page 9 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
Boquerón, Puerto Rico

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[Insert Signature Lines (for final modification)]

METHODOLOGY USED TO COMPLETE THE RECOVERY PLAN AMENDMENT

The proposed amendments to the recovery criteria were developed using the 2013 5-year reviews and the most recent studies on elfin tree fern and Cook's holly. This information was developed by U.S. Fish and Wildlife Service (Service) biologists and managers in the Caribbean Ecological Services Field Office (CESFO).

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 delisting factors.

Recovery Criteria

See previous version of criteria in *Ilex cookii* and *Cyathea dryopteroides* Recovery Plan on page 9.

Synthesis

The elfin tree fern and Cook's holly are endemic to the dwarf or elfin forests of the central mountains of Puerto Rico (Proctor 1989, USFWS 1991). At the time of listing, only four (4) populations were known for the elfin tree fern. A total of approximately 95 individuals of this perennial species were documented in four areas: *Monte Guilarte*, *Monte Jayuya*, *Cerro Rosa*, and *Monte Cerrote* (USFWS 1991). Although the species was first discovered in 1915 by Britton and Brown at *Monte Cerrote* in the municipality of Adjuntas (Vivaldi *et al*. 1981), it has not been found there despite search efforts made at this locality (USFWS 2013a). In 2013, three populations of the elfin tree fern were reported, totaling approximately 105 individuals: 10 individuals in *Monte Guilarte* (Guilarte Commonwealth Forest); more than 70 individuals in *Monte Jayuya* (Toro Negro Commonwealth Forest); and about 25 individuals in *Cerro Rosa* (Toro Negro Commonwealth Forest) (USFWS 2013a). However, Camacho-López (2017) reported a total of 149 elfin tree fern individuals in 6 populations at high elevations on the central mountains of Puerto Rico: 15 in *Monte Guilarte*, 47 in *Cerro Punta* (Guilarte Commonwealth Forest), 40 in *Monte Jayuya*, 28 in *Cerro Maravilla* (Toro Negro Commonwealth Forest), 12 in *Tres Picachos*, (Tres Picachos Commonwealth Forest); and 7 in *Cerro Rosa*, (Toro Negro Commonwealth Forest) (Camacho-López 2017). All of these peaks are within Commonwealth Forests managed by the Puerto Rico Department of Natural and Environmental Resources (PRDNER).

Cook's holly is only known from two central mountain peaks within the Toro Negro Commonwealth Forest: *Monte Jayuya* and *Cerro Punta* (USFWS 1991). Only a few individuals of this species have been documented (i.e., 1 adult and 4 seedlings at *Cerro Punta*, and 30 seedlings at *Monte Jayuya* (USFWS 1991)). There is no recent survey or population estimates currently available for this species (USFWS 2013b).

The most recent information indicates that the elfin tree fern and Cook's holly are currently threatened by Factor A (present or threatened destruction, modification, or curtailment of it habitat or range), and Factor E (other natural or manmade factors affecting its continued existence) (USFWS 2013a, USFWS 2013b). Although the elfin tree fern and Cook's holly are found within Commonwealth forests, their habitat is still affected by the construction of communication facilities or the expansion of existing ones, and road maintenance activities (USFWS 2013a, USFWS 2013b). Although the construction of new communication facilities or the expansion of existing ones is authorized under Commonwealth permits, the Puerto Rico Department of Natural and Environmental Resources (PRDNER) has several documented incidents of vegetation-clearing activities that have destroyed elfin tree fern habitat within Commonwealth forest as a result of lack of prior coordination with forest managers to ensure protection of the species and its habitat (USFWS 2013a, USFWS 2013b). Also, the telecommunication companies and the Puerto Rico Energy and Power Authority (PREPA) conduct maintenance activities such as trimming and clearing the vegetation without coordination with forest managers, which can result in direct impacts (cutting of individuals) or indirect impacts (opening forest gaps that can serve as corridors for invasive plant species) to both the elfin tree fern and Cook's holly (USFWS 2013a, USFWS 2013b). Also, the two species are threatened by low numbers, restricted distribution, human-induced fires, and invasive plants (USFWS 2013a, USFWS 2013b).

Factor B (overutilization for commercial, recreational, scientific, or educational purposes) was not considered a threat when Cook's holly was listed. However, since the species has only few individuals known in a limited range, the Service considers collection (Factor B) as a threat to this species (USFWS 2013b). Factor D (inadequacy of existing regulatory mechanisms) is now considered a threat for the elfin tree fern (USFWS 2013a), but not for Cook's holly (USFWS 2013b).

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 the elfin tree fern and Cook's holly 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 the elfin tree fern and Cook's holly, which will supersede those included in their 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 elfin tree fern and Cook's holly 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 the elfin tree fern and Cook's holly are as follows:

1. Threat reduction and management activities have been implemented to a degree that the species are viable (addresses Factors A, B, D and E).

2. The existing six (6) populations of elfin tree fern and the two (2) populations of Cook's holly within protected areas (Commonwealth Forests) show a stable or increasing trend, evidenced by natural recruitment and multiple age classes (addresses Factors A and E).

3. Establish two (2) additional populations of each the elfin tree fern and the Cook's holly within protected areas that shows a stable or increasing trend, evidenced by natural recruitment and multiple age classes (addresses Factors A and E).

Rationale for Recovery Criteria

The proposed delisting recovery criteria reflect the best available and most up-to date information on the biology of both species and their habitat. Although the species are currently found within Commonwealth forests, because of their locations, they are still threatened by habitat destruction and modification, low population numbers, restricted habitat, human-induced fires, and invasive plant species caused by human disturbance on these peaks. Therefore, in order to protect and ensure the viability of both the elfin tree fern and Cook's holly into the future, a mechanism to minimize habitat modification should be adopted by the appropriate government agencies that conduct or regulate work within the habitat of these species (e.g., Regulatory Committee of Telecommunications, Department of Transportation and Public Works, PREPA, PRDNER). A site specific protocol should be developed and implemented to avoid or minimize detrimental effects of telecommunication facilities, associated infrastructure, and maintenance on known populations of both species within the Toro Negro and Guilarte Commonwealth forests.

Propagation of the elfin tree fern has been successfully conducted by the Fairchild Tropical Botanic Garden (Possely and Lange 2017), and information on the species' habitat requirements and phenology has been gathered (Camacho-López 2017). However, little is known about the phenology, recruitment, and habitat requirements of Cook's holly (USFWS 1991, USFWS 2013b). Efforts toward searching for new populations of Cook's holly on potential habitat should be a priority action for the species. As new information becomes available and when individuals are documented, a propagation protocol should be evaluated and developed for Cook's holly in order to establish new self-sustainable populations in protected areas.

Establishing new populations and enhancing known populations of the elfin tree fern and Cook's holly would increase their representation, redundancy and resiliency in the event of natural disasters such as hurricanes, and would increase their genetic diversity. In addition, the establishment of at least two new populations away from telecommunications facilities and roads, and managed for conservation, would avoid anthropogenic threats such as habitat destruction and modification, and intentional cutting or removal of these species. Based on

Camacho-López's (2017) recommendation, the elfin tree fern should be reintroduced in areas where environmental impacts of communication antennas and littering are not present, such as *Monte Guilarte*, *Tres Picachos* and *Cerro Rosa*.

ADDITIONAL SITE SPECIFIC RECOVERY ACTIONS

Develop a long-term management and monitoring protocol of natural and established populations to reduce site-specific threats for elfin tree fern and Cook's holly and its habitat. These recovery actions should be coordinated with PRDNER and be included within Task 121: *Monitor all known populations* of the approved recovery plan.

LITERATURE CITED

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