

Recovery Outline for elfin-woods warbler (*Setophaga angelae*)

December 2016



Photo-Mike Morel

I. Introduction

This document outlines a preliminary course of action for the recovery of the elfin-woods warbler (*Setophaga angelae*) until a comprehensive recovery plan for the species is approved. We (U.S. Fish and Wildlife Service (Service)) listed the elfin-woods warbler as threatened with a 4(d) rule (81 FR 40534, June 22, 2016). The elfin-woods warbler was originally classified under the genus *Dendroica*, but it is now recognized as *Setophaga* (Lovette *et al.* 2010). Angela and Cameron Kepler discovered the species in 1971, in the Dwarf forest type at El Yunque National Forest (EYNF) in eastern Puerto Rico (Kepler and Parks 1972). In addition, the elfin-woods warbler was reported in the Maricao Commonwealth Forest (MCF) in western Puerto Rico, Toro Negro Commonwealth Forest in the Cordillera Central (central mountain range) (Pérez-Rivera 1979), and in the area of Guavate in the Carite Commonwealth Forest, east-central Puerto Rico (Pérez-Rivera and Maldonado 1977). The elfin-woods warbler is an endemic bird of Puerto Rico with a very limited distribution and currently known only from EYNF, and MCF and adjacent private lands (Cruz and Delannoy 1984; Anadón-Irizarry 2006; González 2008; Salguero 2015, pers. comm.). It is found on the summits of the mountains and its habitat is composed of dense stands of short, small diameter and twisted trees and shrubs. The species is currently threatened throughout all of its range due to threats related to habitat modification on private lands under agricultural and other land use requiring vegetation clearing (Factor A in the Endangered Species Act), and to other natural or manmade factors (Factor E) such as restricted distribution and lack of connectivity between populations, genetic drift, hurricanes, and the effects of climate change.

Listing and Contact Information:

Listing Classification: Threatened range-wide
Effective Listing Date: July 22, 2016
Lead Agency, Region: U.S. Fish and Wildlife Service, Southeast Region
Lead Field Office: Caribbean Ecological Service Field Office
Contact Biologist: José G. Martínez, (787) 851-7297, jose_martinez@fws.gov

II. Recovery Status Assessment

A. Biology/Threats Assessment

[*Note: For a more detailed description of the biology and an assessment of the listing factors as they relate to elfin-woods warbler, please see the June 22, 2016 final listing rule (81FR 40534)*].

The elfin-woods warbler is about 12.5 centimeters (cm) (5 inches (in)) in length and weighs about a third of an ounce (8.4 grams) (Raffaele 1998). The adult's upper body is predominantly black and white, with conspicuous white patches on ear covers and sides of the neck, incomplete white eye ring, and black crown (Raffaele 1989). Immature elfin-woods warblers are similar to adults, but their black color is replaced by a grayish-green color on the back, and a yellowish-green color on the head and underparts (Raffaele 1989). The bird's call comprises a series of short, rapidly uttered, unmusical notes in one pitch, increasing in volume and ending with a short series of distinct double notes (Curson *et al.* 1994).

The majority of extant elfin-woods warbler populations are restricted to two disjunct primary habitats in montane forests at EYNF and MCF, including the private lands adjacent to MCF (Figure 1.) (Anadón-Irizarry 2006, González 2008). The species appears to be stable at the MCF (Delannoy 2007) and it may be declining at EYNF (Arendt *et al.* 2013). At EYNF, there is no continuous montane forested vegetation beyond the forest boundaries mainly due to conversion of agricultural lands and lowland broadleaf forests to urbanized areas (Lugo *et al.* 2004). The lack of suitable habitat between the MCF and EYNF may reduce the probability of elfin-woods warbler re-colonization in other areas (Gochfeld *et al.* 1973, Anadón-Irizarry 2006). Currently, in both forests the habitat modification pressures from agricultural practices and the development of new infrastructure within the forests are very low. However, the species is still also threatened with habitat loss, fragmentation, and degradation in private lands adjacent to these forests, particularly around MCF due to sun-grown coffee plantations and small residential development. Hurricanes, genetic drift, effects of climate change, restricted distribution, lack of connectivity, and human-induced fires also threaten the warbler's survival. These threats might be worsened by the limited distribution of this bird. Although these threats may act in isolation, it is likely that two or more of these stressors act simultaneously or in combination resulting in cumulative impacts to populations of this species.

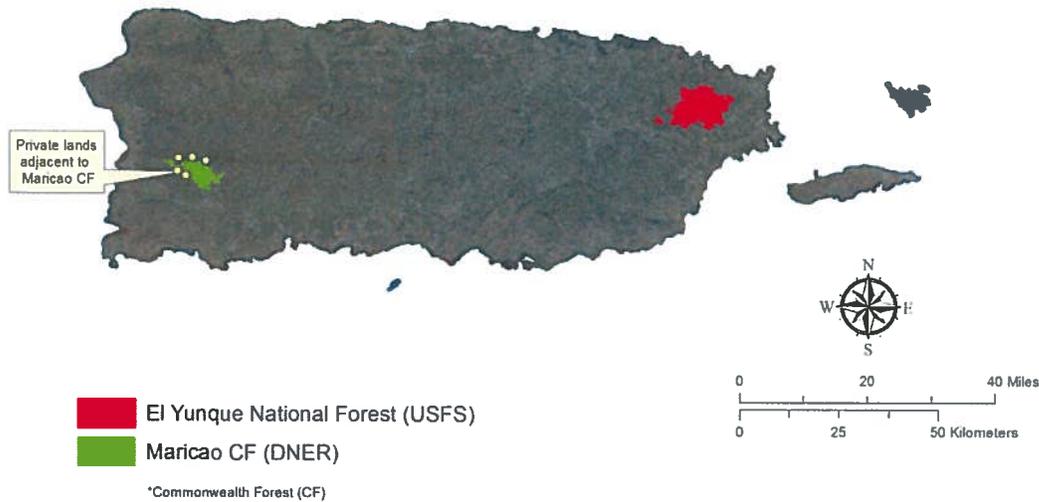


Figure 1. The current range of the elfin-woods warbler in Puerto Rico.

B. Conservation Actions

In 2014, the Service, the Puerto Rico Department of Natural and Environmental Resources and the U.S. Forest Service signed a Candidate Conservation Agreement (CCA) to work together to conserve the elfin-woods warbler and restore habitat in the MCF and EYNF (USFWS 2014). With this CCA, the parties agreed to promote, develop, and implement best management practices to avoid any potential threat to suitable and occupied warbler habitat and populations. Additionally, the CCA will help develop and design studies to gather information on the elfin-woods warbler (*e.g.*, habitat needs, habitat use, movement and activity patterns, responses to biotic and abiotic factors, and genetic variation) in order to better design and implement conservation strategies for the recovery of the species.

Other conservation actions benefitting the elfin-woods warbler include agreements with private landowners through the Natural Resources Conservation Service’s Farm Bill Programs, and the Service’s Partners for Fish and Wildlife and Coastal Programs to implement habitat conservation and restoration practices on agricultural lands adjacent to the MCF. Since the beginning of these conservation initiatives, about 490 acres of tropical upland forest, and 4 miles of riverbank buffers were conserved and restored through the Service’s Partners for Fish and Wildlife Program in collaboration with the Natural Resources Conservation Service, Farm Service Agency, Puerto Rico Department Natural and Environmental Resources, Envirosurvey, Inc., and other partners.

In addition, the Service has determined that species-specific exceptions authorized under section 4(d) of the Act are necessary and advisable to promote the conservation of the elfin-woods warbler [i.e. incidental take will not be considered for landowners making the conversion of sun-grown coffee to shade-grown coffee plantations; planting riparian buffers with native vegetation and removing exotic vegetation; and those making reforestation and forested habitat enhancement projects (see 81 FR 40547 for exact detail of exceptions). These exceptions provide incentive for landowners to maintain connectivity of suitable elfin-woods warbler habitats, allowing for dispersal between forested and agricultural lands,

minimizing habitat disturbance by conducting certain activities outside the peak of the elfin-woods warbler's breeding season and maximizing the amount of habitat that is available for the species. The purpose of these exceptions is to improve crop diversity by growing mixed but compatible crops having different heights in the same area. This will improve soil quality, reduce erosion, enhance degraded areas, and provide habitat for wildlife species such as the elfin-woods warbler. **This increased flexibility under the 4(d) rule is a big deal for this agricultural community. It allows practices that harmonize with the conservation of the species.**

III. Preliminary Recovery Strategy

A. Recovery Priority Number with Rationale

Elfin-woods warbler is assigned a recovery priority of **14**, which indicates the species faces a low degree of threat and a high recovery potential. Recovery potential is considered high for the elfin-woods warbler because of the likelihood that conservation actions will alleviate threats to the species and its habitat. The low degree of threat is based on the majority of extant elfin-woods warbler populations occur on public lands managed for conservation purposes where activities that may affect the species or its habitat are regulated, and measures to minimize or avoid those impacts are being implemented based on management plans or agencies' management mandates. Also, the species has been reported on private lands only adjacent to MCF. Since 2010, these areas are part of a multi-agency habitat restoration initiative to promote the improvement of physical habitat quality, such as the conversion of sun-grown coffee to shade-grown coffee, reforestation with native trees, riparian buffering, and forested habitat enhancement (*i.e.*, exotic species removal, and native tree planting), would have a positive effect on elfin-woods warbler populations and would provide an overall conservation benefit to the species.

B. Recovery Strategy

At present, the elfin-woods warbler occurs in the Maricao area and EYNF, located about 150 km from each other. Searches for the species in others areas in Puerto Rico with similar habitat have not been successful.

Because of the very limited distribution of the elfin-woods warbler, in our initial recovery strategy we will continue working with partners to maintain and protect the known populations and known occupied habitat. In addition, we would promote research to better understand the species' biology, dynamics, and ecology. The monitoring of the current populations is important to understand the dynamic of that ecosystem and habitat requirements for the species survival. As we work to find out more about this species, we will continue addressing current threats to the elfin-woods warbler. For example, continue working with landowners on habitat protection and enhancement projects in properties within and surrounding the occupied habitat (e.g., EYNF, MCF, Maricao farms). These habitat protection and enhancement projects include the conversion of sun coffee to shade grown coffee, establishment of native forests, control livestock activities, reduction of human-

induced fires, among others. We will also expand our efforts to increase public awareness of this bird as another unique species that we are working to recover.

C. Initial Action Plan

Anticipated Recovery Actions in relation to our recovery strategy described above:

1. Establish additional Partner and Fish Wildlife agreements, in cooperation with Natural Resources Conservation Service with landowners near Maricao Commonwealth Forest to protect and enhance elfin-woods warbler habitat.
2. Promote conservation actions and sustainable practices of existing agriculture land in areas where the warbler occurs near the Maricao Commonwealth Forest.
3. Implement habitat restoration projects in coordination with the Caribbean Landscape Conservation Cooperative (CLCC) to provide effective corridors for the elfin-woods warbler dispersal throughout the central mountains of Puerto Rico to help expand the current distribution of the species.
4. Conduct population surveys to identify additional areas where the species may occur in Puerto Rico.
5. Develop and implement a program to inform the public on the importance to protect the elfin-woods warbler and its habitat.
6. Promote planting native trees to provide shade to coffee trees, and control of invasive non-native plant species that may be modifying suitable habitat for the elfin-woods warbler.
7. Monitor success of recovery actions and use results to adapt management actions.
8. Promote the development of a human-induced fire prevention plan for the areas occupied by the species in Maricao.
9. Promote research that forecast the elfin-woods warbler's vulnerability and response to climate change.

IV. Preplanning Process

We will develop a Species Status Assessment (SSA) to inform future actions for the species and the recovery plan for the elfin-woods warbler. The recovery plan will include objectives and measurable criteria which, when met, will ensure the conservation of the species. The SSA will assess the warbler's biological condition and will provide a summary of the species needs, the current species' condition, and the future species condition. Recovery criteria will address all meaningful threats to the species, as well as estimate the time and the cost to achieve recovery. The SSA and the recovery planning effort will be led by the Caribbean

Ecological Service Field Office in close coordination with the U.S. Forest Service, Puerto Rico Department of Natural and Environmental Resources and a network of experts (i.e. Universities, researchers), and knowledgeable interested parties and partners agencies (i.e. NRCS). These partners may provide expertise, share information on recovery population threshold, and recommend land management and restoration projects.

The draft recovery plan should be finalized and sent to the Regional Office for review in June 2018. The final recovery plan should be finalized and sent to the Regional Office for review by June 2019. These timelines may be affected by available resources and region priorities.

We have notified various Federal, State, and local agencies about the listing of the elfin-woods warbler in the event that if there are federal actions that may affect the elfin-woods warbler, they would consult with the Service and be compliant with section 7 and 10 of the ESA.

Approve:  _____ Date: 12-15-16

Assistant Regional Director, Region 4

References Cited

- Anadón-Irizarry, V. 2006. Distribution, habitat occupancy and population density of the elfin-woods warbler (*Dendroica angelae*) in Puerto Rico. M.S. thesis, University of Puerto Rico, Mayagüez Campus. 53 pp.
- Arendt, W.J., Qian, S.S., Mineard, K.A., 2013. Population decline of the Elfin-woods Warbler *Setophaga angelae* in eastern Puerto Rico. Bird Conservation International, Birdlife International 2013 doi: 10.1017/S0959270913000166.
- Curson, J., D. Quinn, and D. Beadle. 1994. Warblers of the Americas. Houghton Mifflin Co., New York. 252 pp.
- Kepler, C. B. and K. C. Parkes. 1972. A new species of warbler (Parulidae) from Puerto Rico. Auk 89: 1-18.
- Lovette, I.J., J.L. Perez-Eman, J.P. Sullivan, R.C. Banks, I. Fiorentino, S. Cordoba-Cordoba, M. Echeverry-Galvis, F.K. Barker, K.J. Burns, J. Klicka, S. M. Lanyon, and E. Bermingham. 2010. A comprehensive multilocus phylogeny for the wood-warblers and a revised classification of the Parulidae (Aves). Molecular Phylogenetics and Evolution 57: 753-770.
- Lugo, A.E., T. M. López, O.M. Ramos-González, and L.L. Vélez. 2004. Urbanización de los terrenos en la periferia de El Yunque. United States Department of Agriculture, Forest Service. General Technical Report WO. 66 pp.
- Gochfeld, M., D. O. Hill, and G. Tudor. 1973. A second population of the recently described Elfin-woods Warbler and other bird records from the West Indies. Caribbean Journal of Science, 13:231-235.
- González, G. M. 2008. Distribución y abundancia de la reinita de bosque enano (*Dendroica angelae*) en el Bosque de Maricao y en áreas adyacentes. M.S. thesis, University of Puerto Rico, Mayagüez Campus. 81 pp.
- Pérez-Rivera, R. A. 1979. Lista revisada de los animales vulnerables, amenazados, o en peligro de extinción en Puerto Rico. Cuadernos de Revista de Cayey Número 3, Universidad de Puerto Rico, Cayey, Puerto Rico.
- Pérez-Rivera, R. A., and L. A. Maldonado. 1977. Lista de cotejo de las aves de Cayey y algunos comentarios sobre éstas. Revista Cayey 9 (19): 129-136.
- Raffaele, H.A. 1989. A guide to the birds of Puerto Rico and the Virgin Islands. Princeton: Princeton University Press. 254 pp.

Salguero, J. 2015. Comment on Proposed Rule to List the Elfin-woods Warbler as Threatened (Comment ID: FWS-R4-ES-2015-0144-0010). Received November 24, 2015.

U.S. Fish and Wildlife Service (USFWS) 2014. Candidate Conservation Agreement for the Elfin-woods Warbler (*Setophaga angelae*) at El Yunque National Forest and Maricao Commonwealth Forest. 28 pp.