

**CANDIDATE CONSERVATION AGREEMENT FOR  
THE ELFIN-WOODS WARBLER (*Setophaga angelae*)  
AT EL YUNQUE NATIONAL FOREST AND  
MARICAO COMMONWEALTH FOREST**

**Between the**

**U.S. Forest Service**

**And**

**Puerto Rico Department of Natural and Environmental  
Resources**

**And**

**U.S. Fish and Wildlife Service**



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## Table of Content

I.	INTRODUCTION.....	5
II.	BACKGROUND.....	5
III.	GOAL.....	6
IV.	OBJECTIVES.....	6
V.	BENEFITS TO ADDITIONAL SPECIES.....	6
VI.	PARTIES TO THE AGREEMENT.....	7
VII.	AUTHORITY.....	7
	United States Forest Service.....	7
	United States Fish & Wildlife Service.....	7
	Puerto Rico Department of Natural and Environmental Resources.....	8
VIII.	CCA MANAGEMENT AND ADMINISTRATION.....	8
IX.	SPECIES DESCRIPTION.....	9
X.	STATUS AND DISTRIBUTION.....	9
	Status.....	9
	Distribution.....	11
XI.	THREATS ANALYSIS.....	12
	A. The present or threatened destruction, modification, or curtailment of its habitat... 12	
	B. Overutilization for commercial, recreational, scientific, or educational purposes.....12	
	C. Disease or predation.....	14
	D. The inadequacy of existing regulatory mechanisms.....	15
	E. Other natural or manmade factors affecting its continued existence.....	16
XII.	CONSERVATION STRATEGY.....	17

XIII.	CONSERVATION ACTIONS TO BE IMPLEMENTED.....	18
	Strategic Conservation Efforts.....	18
	Habitat Restoration.....	18
	EWWA Ecology.....	19
	Monitoring Efforts.....	19
	Education and Outreach.....	20
XIV.	CONSERVATION SCHEDULE AND ASSESSMENT.....	20
XV.	DURATION AND AMENDMENTS.....	20
XVI.	EFFECT OF THE CCA IN THE EVENT OF A LISTING DECISION.....	21
XVII.	ADDITIONAL PROVISIONS.....	21
	National Environmental Policy Act (NEPA) Compliance.....	21
	Remedies.....	21
	No Third Party Beneficiaries.....	21
XVIII.	LITERATURE CITED.....	22
XIX.	FIGURES.....	24

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## I. INTRODUCTION

This Candidate Conservation Agreement (CCA) for the Elfin-woods warbler, *Setophaga angelae* (EWWA), has been developed as a cooperative effort between the U.S. Fish and Wildlife Service (hereinafter referred to as Service), the U.S.D.A. Forest Service (hereinafter referred to as FS) and the Puerto Rico Department of Natural and Environmental Resources (hereinafter referred to as PRDNER) in order to collectively implement proactive conservation measures necessary for the conservation of this species across its range in Puerto Rico. This CCA will allow the Parties to leverage knowledge and funding (as available) within a common conservation approach and framework. These measures are taken in accordance with the Endangered Species Act of 1973 (ESA), as amended, 16 U.S.C. 1531 *et. seq.* (Act), the Organic Act of the Department of Natural and Environmental Resources of Puerto Rico (No. 23 of June 20, 1972 as amended) which created the Department, the Puerto Rico's Fisheries Act (No. 278 of November 29, 1998), Puerto Rico Vulnerable and Endangered Species Management Regulation (Num. 6766) of February 11, 2004, and The Puerto Rico's New Wildlife Act (No. 241 of August 15, 1999). Implementation of this CCA will conserve and maintain important habitat for the EWWA, and reduce potential threats to this species and its habitat.

The terms of this CCA shall be governed by and construed in accordance with applicable Federal and State laws. Nothing in this CCA is intended to limit the authority of the Parties to fulfill their responsibilities under Federal laws, or to supersede applicable State authorities. Consistent with the specific commitments by, and the available resources of, the Parties, conservation actions set forth in this Agreement will be implemented and will remain in effect for the duration of the CCA. Under this CCA, no permit that authorizes incidental take and no assurances are provided by the Service, if the species becomes listed as threatened or endangered in the future.

## II. BACKGROUND

The EWWA is an endemic species to Puerto Rico listed as Vulnerable (VU) by the State and petitioned as Candidate by the Service in 2004. This species was initially thought to occur only in the Luquillo Mountains (Kepler and Parks 1972). However, the species was later discovered in other forests within the Cordillera Central of Puerto Rico (i.e., Maricao, Toro Negro and Carite Commonwealth Forests; Figure 1). The populations in the Toro Negro and Carite Commonwealth Forests are presumed extirpated; currently, the EWWA is known only from the El Yunque National Forest (EYNF; Eastern EWWA Population), located within the Luquillo Mountains, and the Maricao Commonwealth Forest (MCF; Western EWWA Population; Figure 2). The EYNF is administrated by the FS and MCF is administered by PRDNER.

Since 2009, the Service has been providing technical assistance to the FS for the development of a CCA for the Eastern Population. However, in 2014 both agencies

(i.e., FS and the Service) acknowledged the importance to develop a CCA that also includes the EWWA Western Population. Therefore, this CCA is the result of the willingness of the Service's collaborators (i.e., FS and PRDNER) to develop and implement conservation, research and restoration actions that may benefit the EWWA populations in Puerto Rico.

### III. GOAL

The goal of this CCA is to address the conservation needs to maintain, conserve, restore and improve EWWA habitats and populations at EYNF and MCF, to reduce threats to the species and its habitat, and to foster cooperation among the governmental and public agencies working on the EWWA, in order to reduce the need to list the species under the ESA and the Puerto Rico's New Wildlife Act Regulation 6766.

### IV. OBJECTIVES

The objectives of this CCA are to:

- Identify existing and future threats within EYNF and MCF, implement habitat management activities to help mitigate these threats, and develop conservation measures and strategies to maintain, restore or enhance the EWWA habitat;
- Acquire EWWA population and distribution baseline information to develop future conservation actions; and
- Monitor the response of the species to forest and other management activities implemented within EYNF and MCF.

These objectives will be accomplished through the implementation of specific measures set forth in Section XI and XII of this CCA.

### V. BENEFITS TO ADDITIONAL SPECIES

The primary focus of this CCA is the conservation of the EWWA and its habitat at EYNF and MCF. The EWWA seems to be restricted to certain unique habitats within EYNF and MCF that also support other rare animal and plant species. Therefore, the implementation of this CCA may significantly reduce or eliminate threats to other listed and at-risk species, such as the Puerto Rican parrot (*Amazona vittata*), Puerto Rican boa (*Epicrates inornatus*, recently changed to *Chilabothrus inornatus*), Puerto Rican sharp-shinned hawk (*Accipiter striatus vernator*), and Puerto Rican broad-winged hawk (*Buteo platypterus brunnescens*); and several listed or at-risk plant species (*Pleodendron macranthum*, *Callicarpa ampla*, *Eugenia haematocarpa*, *Ilex sintenisii*, *Styrax portoricensis*, *Ternstroemia luquillensis*, *Ternstroemia subsessilis*, *Lepanthes*

*eltorensis*, *Varronia bellonis*, *Crescentia portoricensis*, *Gesneria pauciflora*, *Cranichis richartii*, *Brunfelsia densifolia*, *Brunfelsia portoricensis*, *Buxus portoricensis*, *Calyptanthes luquillensis*, *Pouteria hoteana* and *Ottoschulzia rhodoxylon*).

## VI. PARTIES TO THE AGREEMENT

- U.S. Department of Agriculture (USDA Forest Service), El Yunque National Forest.
- U.S. Department of Interior, Fish and Wildlife Service, Caribbean Ecological Services Field Office (CESFO).
- Puerto Rico Department of Natural and Environmental Resources, Fisheries and Wildlife Bureau/Forestry Resources Bureau.

## VII. AUTHORITY

### U.S Fish and Wildlife Service

Sections 2 and 7 of the ESA, 16 U.S.C §§ 1531-1544, authorize the Service and other Federal parties to enter into this CCA. Section 2 of the ESA states that encouraging parties to develop and maintain conservation programs is a key to safeguarding the nation's heritage on fish, wildlife, and plants. Section 2(c)(1) of the ESA, (16 U.S.C. 1531(c)(1)), states "the policy of Congress is that all Federal departments and agencies shall seek to conserve endangered and threatened species and shall utilize their authorities in furtherance of the purposes of the ESA." Section 7 of the ESA requires Federal agencies to review programs that they administer and to utilize such programs in furtherance of the purposes of the ESA. Entering into this CCA is an important and proactive initiative that follows the intent of Section 7 to provide for the conservation of the Nation's fish, wildlife, and plants.

In addition to the ESA, the Fish and Wildlife Coordination Act of 1956 provides that the Secretary shall "*...take such steps as may be required for the development, advancement, management, conservation, and protection of fish and wildlife resources...*" The Fish and Wildlife Coordination Act states that the Secretary is authorized "*to provide assistance to, and cooperate with, Federal, State, and public or private agencies and organizations in the development, protection, rearing, and stocking of all species of wildlife, resources thereof, and their habitat...*"

### U.S. Department of Agriculture Forest Service

The USDA Forest Service has recognized the need to implement special management for rare species on the lands it administers. Under the National Forest

Management Act of 1976 (NFMA) and Multiple-Use Sustained-yield Act of 1960, the U.S. Forest Service has the authority to conduct management actions for specific wildlife species. The Regional Forester may designate these species as "Sensitive" as described in the Forest Service Manual 2670.22. Presently, the FS is implementing a new national planning rule under NFMA and those species formerly known as "Sensitive" and meeting the new qualifying criteria will be further known as "Species of Conservation Concern". The FS must analyze and assess effects to Species of Conservation Concern before implementing any management actions on National Forest Service lands.

#### Puerto Rico Department of Natural and Environmental Resources

The Department, through its Secretary, has been delegated authority to administer the natural resources in the Government of Puerto Rico, under the Constitution of the Commonwealth of Puerto Rico (Article VI, Section 9); Puerto Rico's Environmental Public Policy Act (Law No.9-1970, as amended); the Organic Act of the Department of Natural and Environmental Resources of Puerto Rico (Law No. 23-1972, as amended); the Puerto Rico's Fisheries Act (Law No. 278-1998); Puerto Rico Vulnerable and Endangered Species Management Regulation (Num. 6766) of February 11, 2004; the Puerto Rico's New Wildlife Act (Law No. 241-1999); and the Puerto Rico Forest Law (Law No. 133-1975, as amended). The Cooperative Agreement between U.S. Fish and Wildlife Service and the Department of Natural Resources (1984) - Endangered and Threatened Fish and Wildlife, Endangered and Threatened Plant Species - allows the Department to conduct outreach, management and recovery activities for endangered fish and wildlife species.

### VIII. CCA MANAGEMENT AND ADMINISTRATION

In order to meet the objectives of this CCA, a EWWA Technical Team (EWWA-TT) will be established to advise, administer, and periodically review this Agreement. The responsibility of this team is to coordinate the implementation and administration of the CCA without superseding the jurisdictional authorities of any party. The EWWA-TT will develop and make recommendations for the conservation and research needs of the EWWA and identify new threats in its distribution.

The EWWA-TT will consist of one or more designated representatives from each Party to this CCA. Parties may have multiple sub-organizations involved; e.g., Wildlife, Forestry, Habitat Restoration, and Endangered Species divisions of the State and Federal agencies. The EWWA-TT will be chaired by participating State and Federal representatives only and the chairmanship will rotate annually. The Service will hold the first chairmanship followed by the FS and PRDNER in that order.

The EWWA-TT is responsible for the sharing of the results of the conservation activities and monitoring being conducted by the Parties in accordance with the CCA. The EWWA-TT shall promote future collaboration and support for the EWWA



recovery through this CCA. The EWWA-TT will develop an annual assessment of the progress towards implementing the conservation goals described in this CCA. This assessment will be comprised of an annual report and recommendations for CCA revisions and conservation measures. The annual report will be based on input provided to the EWWA-TT by the Parties.

## IX. SPECIES DESCRIPTION

The EWWA is a small 8 gram (g) bird in the family *Parulidae* about 12.5 centimeters (cm) (4.9 inches [in]) in length, and entirely black and white (Arendt *et al.* 2004). Adults have a thin, white eyebrow stripe, white patches on ear-covers and neck, incomplete eye ring, and black crown. Immature EWWAs are similar to the adult, but the black is replaced by grayish-green on the back, and yellowish-green on the head and underparts (Raffaele *et al.* 1998). This species builds a compact cup nest, usually close to the trunk and well hidden among the epiphytes of small trees. Its breeding season extends from March to June. EWWA forage in the middle part of trees, gleaning insects from leaves in the outer portion of tree crowns.

The EWWA is endemic to Puerto Rico and has been reported in humid montane forest habitats. Kepler and Parkes (1972) described the EWWA from the high elevation Elfin Woodland forests (640 to 1,030 meters [m]) and occasionally Palo Colorado forests in EYNF. Initially thought to occur only in the Luquillo Mountains (EYNF), this species was later discovered in the Maricao, Toro Negro, and Carite Commonwealth forests (Gochfeld *et al.* 1973; Cruz and Delannoy 1984; Raffaele *et al.* 1998). Wiley and Bauer (1985) later reported the species from the Elfin forests and lower elevation forests (370 to 600 m) such as Palo Colorado and Sierra Palm forests in the EYNF. Based on surveys conducted in 1989 and 1990, Arroyo-Vázquez (1991) suggested that the species migrates vertically in elevation. In addition, the species seems to move towards the north facing valleys during the months of heaviest rainfall.

## X. STATUS AND DISTRIBUTION

### Status:

The EWWA is considered a Candidate species by the Service and as Vulnerable (VU) by the State since 2004. A VU species is a species that, although not critically endangered, faces a high risk of extinction in the wild in the immediate future; a “vulnerable” status is equivalent to a “threatened” status under the ESA. Although the species historical distribution included EYNF and other forests within the Cordillera Central of Puerto Rico (see Section II; Background), currently, the EWWA is known only from the EYNF and MCF.

Kepler and Parkes (1972) estimated the EWWA population at fewer than 300 pairs occurring in 450ha at EYNF where the species was discovered in 1971. In 1995,

Waide reported an estimated population of 138 pairs in 329 ha of Elfin woodland at EYNF. However, Waide's surveys showed considerable EWWA activity outside of Dwarf Forest, particularly in Palo Colorado Forest (Waide 1995).

Between 2003 and 2004, Anadón-Irizarry (2006) conducted surveys in montane forests along routes of 0.8 to 3km in length with point-count stations 200m apart established in habitats at 200 to 1,031m in elevation. Anadón-Irizarry (2006) covered 155.2 ha of upland woods habitat and recorded 196 EWWA during 7 counts in 97 point-count stations at EYNF. During this study, the EWWA population was estimated in 1.26 warblers/ha along the 4 forest types surveyed. The species was not encountered at the Palm forest and the highest density was estimated in 2.11 warblers/ha at the Palo Colorado forest (Dwarf Forest 1.85 warblers/ha and Tabonuco Forest 0.025 warblers/ha).

Despite the previous information, recent published studies on the EYNF revealed new information regarding the status of the EWWA in that forest (Arendt 2013). Arendt (2013) conducted bird surveys approximately monthly from 1989 to 2006 following 30 transect points in each forest type. He documented a continuous decline of the EWWA population in eastern Puerto Rico over that period of 17 years (Figure 3). The species showed a significant general declining trend from 0.2 individuals/ha in 1989 in elfin woodland to 0.02/ha in 2006, and from 1 to 0.2 in *palo colorado* forest. During that period of time, Arendt (2013) compiled a total of 1,442 EWWA detections: 1,035 (72%) in *palo colorado* forest (Icacos Valley), 405 (28%) in elfin woodland, 397 at East Peak, and only eight at Mt. Britton. EWWA were recorded at all 30 points in Icacos Valley and all 15 points at East Peak, six of 15 points at Mt. Britton (elfin woodland), and two of 30 points in *tabonuco* forest at El Verde. In *palo colorado* forest, EWWA detections decreased from 675 between January 1989 and December 1997 to 360 between February 1998 and October 2006. In elfin woodland, EWWA detections also decreased from 333 to 64 at East Peak and from six to two at Mt. Britton during the same two periods.

The first comprehensive study to estimate EWWA population in MCF was conducted by Cruz and Delannoy (1984). These researchers studied the distribution, habitat use and the population densities of the species within the three life zones (i.e., Subtropical Moist, Subtropical Wet, and Subtropical Lower Montane Wet Forests) in MCF. Sampled trails within these life zones were Los Viveros (*Podocarpus* Forest), Campamento Santana and Rosario Alto. Cruz and Delannoy (1984) reported the highest densities at Los Viveros (0.84 warblers/ha) and significantly lower densities at Rosario Alto (0.12 warblers/ha), and Campamento Santana (0.05 warblers/ha) in 25 ha surveyed during the study in each habitat. They suggested that the EWWA was not uniformly distributed throughout the MCF and was found in different habitats within the three study sites. In 1991, Arroyo-Vázquez (1991, 1992) reported an average of 0.36 warblers/ha with a total of 95 individuals reported. He also reported fluctuations in the number of EWWA reported between seasons. The highest EWWA density was recorded in June 1990 at *Podocarpus* forest (Los Viveros Study Site) similar to what was reported by Cruz and Delannoy in 1984.

As part of the surveys conducted by Anadón-Irizarry (2006), 102.4 ha of habitat were surveyed in the MCF. Sixty-four point-count stations were established along the survey routes during 18 counts conducted between 2003 and 2004. Anadón-Irizarry recorded 778 EWWAs for an estimated density of 7.6 warblers/ha; with *Podocarpus* having the highest density (16.9 warblers/ha) and dry slopes with the lowest (1.25/ha). In 2007, Delannoy did not estimate the overall number of individuals in the MCF and adjacent properties, but provided an average EWWA abundance per point-count station. Of the 127 point count stations located within the MCF, 106 (83.5%) yielded positive results for presence of EWWA. Of the 234 point count stations located in lands adjacent to the MCF, only 58 (24.8%) yielded positive results for EWWA presence. The most recent study conducted at MCF (i.e., González 2008) estimated the abundance of the EWWA in habitats of the MCF and adjacent areas. As with previous studies, species abundance was highest in *Podocarpus* Forest (1.41 individuals per point count station) and lowest in dry adjacent forest (0.01 individuals per point count station). The species was not recorded in un-shaded coffee plantations. Within the MCF, González (2008) estimated 97.67 EWWAs in a 203.2 ha/count sampling area; whereas in areas adjacent to the MCF, he estimated 43.02 EWWAs in a 374.4 ha/count sampling area.

Based on the above studies, the MCF sustains a higher number of elfin woods warblers per hectare than the EYNF. Delannoy (2007) stated that these two populations were thriving well, and that there was no indication that they were declining in numbers; suggesting that known EWWA populations were stable at MCF. Recent studies (i.e., Arendt 2013) suggested EWWAs population at MCF represent 62% of the total population of this species in Puerto Rico.

#### Distribution:

Historically the EWWA was found in three sites (i.e., Toro Negro, Maricao Commonwealth Forests, and EYNF). The species is now restricted to two populations: one in the MCF (southwestern Puerto Rico) and one in the EYNF (northeastern Puerto Rico), located about 145 km apart. Arroyo-Vázquez (1991) did not find the EWWA in the Toro Negro Commonwealth Forest during surveys conducted following Hurricane Hugo in 1989.

In 2003 and 2004, Anadón-Irizarry (2006) conducted surveys for the EWWA in Commonwealth Forests of the Cordillera Central of Puerto Rico (i.e., Carite, Toro Negro, Guilarte and Maricao Commonwealth Forests, Bosque del Pueblo), and within EYNF as well, however, only detected the species within MCF and EYNF. Delannoy (2007) surveyed the Susúa Commonwealth Forest and visited the Toro Negro Commonwealth Forest for more than 30 years but did not detect the species.

The EWWA is not evenly distributed within the MCF and EYNF (Anadón-Irizarry 2006). In Maricao, even though the species is found in several habitat types, it is most abundant in *Podocarpus* Forest type at elevations from 601-900 m (1,972- 2, 953 ft.).

The *Podocarpus* forest type comprises about 80 ha (198 ac) or 1.9 % of the forest area. Although the range of this species extends outside the MCF boundaries into adjacent private lands, Delannoy (2007) and Anadón-Irizarry (2006) described a trend in reduction in abundance with decrease of elevation. The species distribution in EYNF revealed that it is more concentrated in the Palo Colorado (0.48 per point count station) and Elfin (0.42 per point count station) forests than Tabonuco (0.01) and Sierra Palm forests (0; Anadón-Irizarry 2006).

In 2011, the Service in collaboration with the Puerto Rican Ornithological Society, Inc. and BirdLife International, conducted the project *Searching for a third population of the Elfin-woods Warbler*. This project included habitat currently occupied by the species within the MCF and predicted habitat within the Central Mountains region of the Island (Colón-Merced 2011). The predicted habitat included public and private within the municipalities of Jayuya, Ciales, Adjuntas, Ponce, Orocovis and Juana Díaz (Figure 4). The main objective of this study was to conduct an assessment of EWWA current geographic distribution in the central mountains of Puerto Rico using a habitat suitability model and a single-season occupancy modeling approach. This approach allowed us to assess the EWWA presence, identify important sites across this region and estimate the detection probability of this species in the study area. The species was detected only in MCF on 11 out of the 14 point counts established in the study area. In MCF, EWWA was detected on all four model habitat classifications (Figure 4) at least once. Very High Quality Habitat type was the only habitat classification where the species was detected in all the point count surveys. Although the detection probability was estimated in 0.7 (70%), the species was not detected on more than 50 point counts established within the central mountainous region.

As previous studies suggested, the current distribution of the species seems to be limited to MCF and EYNF. This research concluded that the Habitat Predictability Model (Colón-Merced 2011) adequately represents the potential habitat of the species and that the occupancy approach utilized was an adequate method to assess the occurrence and geographic distribution of the species. However, this research should be replicated to add additional point-count surveys to carefully cover the habitats classified as High Quality and Medium Quality Habitat types.

## XI. THREATS ANALYSIS

The success of any conservation or recovery effort depends on reducing or eliminating threats to the continued existence of the species. The following summarizes the five listing factors identified in section 4(a) (1) of the ESA which must be considered by the USFWS in evaluating current threats to the EWWA.

- A. The present or threatened destruction, modification, or curtailment of its habitat or range.

The primary threats to EWWAs appear to be habitat destruction, fragmentation, and degradation. Causes of these threats may include, but are not limited to intensive forestry

practices, agriculture, invasive exotic plant establishment, land-use requiring vegetation clearance, and agriculture. However, the areas currently occupied by EWWA include federal and state lands that are under protection. This CCA addresses conservation measures for EWWA on these federal and state lands. EWWA habitat, however, may also exist on privately-owned lands, rendering threats to habitat quality potentially an important issue for other conservation mechanisms to protect EWWA habitat within private lands. These mechanisms may include a Service's biological opinion and conference opinion (BO/CO) for the "Partners for Fish and Wildlife (PFW) and Coastal Programs (CP)" proposed conservation actions restoring and managing EWWA habitat. This may be the mechanism to work with private landowners and provide regulatory predictability to those who enroll in agreements under the Service's PFW and CP in lands adjacent to MCF and EYNF. This mechanism (BO/CO) may evaluate the effects of the conservation actions on other species in accordance with section 7 of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531 et seq.).

In the MCF and EYNF, prime habitats for the EWWA are located within *Podocarpus* and Elfin forests respectively. These types of forests are essential hotspots of high warbler abundance and are very important for maintaining "healthy" populations (Delannoy 2007). Delannoy (2007) stated that in the past, within the MCF, there were strong and continuous pressures to cut and replace *Podocarpus* forest for the development of infrastructure for the communications industry and for the expansion of recreational facilities and trails. Waide (1995) suggested that areas of high pedestrian use at EYNF had fewer birds. Although in the past the EWWA habitat was threaten by modification or degradation, at present time, both forests are managed based on Management Plans which are developed and implemented in close coordination with the Service. The close communication between the Service, the FS and the PRDNER, especially during project design and planning minimizes possible effects of management activities on species and their habitats. Moreover, each agency operates under its authorities and mandates to promote habitat improvement, conservation and restoration.

Within the EYNF, habitat has been protected and management activities are evaluated for impacts to wildlife species. Congress designated part of the EYNF as a Wilderness Area, which includes some of the Elfin, Tabonuco, and Palo Colorado forest types. This brings an extra level of protection to habitats that may include the EWWA. However, given the value of privately-owned lands when managed for EWWA habitat, the protection of private lands adjacent to the EYNF is an important element of a comprehensive conservation plan for EWWA. The adjacent areas of EYNF are known to be susceptible to a general loss of open space through land-use changes and large-scale human development. Although Puerto Rico's Planning Board designated a buffer zone surrounding EYNF as a Special Planning Area to protect the forest from direct impacts due to development, habitat within the buffer zone and in adjacent areas remains vulnerable to effects from land development. If residential development

continues, the transitional habitat found on lands adjacent to EYNF, used by the species for altitudinal migration, may become less common.

To protect the prime habitat at MCF, the PRDNER has established regulatory mechanisms such as laws, regulations and special designations that minimize or prevent impacts from expansion of recreational or trail facilities and construction of infrastructure on EWWA habitat within the MCF (See Factor D below). However, the EWWA is also known to migrate vertically, utilizing lower elevation areas where shade-grown coffee plantations are found on private lands adjacent to the MCF. These areas, described as potential habitat for the species and previously planted in shade-grown coffee, were converted several decades ago to sun grown coffee plantations. This action resulted in the elimination of forest over story, thus, reducing the habitat value to wildlife, including the EWWA.

During his study of privately owned lands adjacent to the MCF, Delannoy (2007) did not detect the presence of the EWWA in the sun (un-shaded) grown coffee plantation in any of the survey points, while the shade-grown coffee plantations exhibited the highest abundance of the species on lands outside the forest. Commonwealth and Federal incentive programs promote the cultivation of shade-grown coffee, instead of sun grown coffee for better, higher-longevity coffee plants, control of sedimentation and erosion, and pest control. Several sun-grown coffee plantations are currently being converted to shade-grown coffee plantations, which also provide better habitat for wildlife and the EWWA. Since 2010, the Service and the NGO Envirosurvey, Inc. joined the conservation efforts lead by the USDA Natural Resources Conservation Service (NRCS) to promote the implementation of conservation practices in the Guánica Bay / Río Loco Watershed Conservation and MCF Areas. This project included the development of a Sun to Shade Coffee Agroforestry Model to promote 30% shade cover for coffee plantations using 4 native tree species traditionally used by coffee farmers in Puerto Rico (i.e., *Andira inermis*, *Inga vera*, *Cordia alliodora* and *Inga laurina*). This initiative also includes conservation practices such as forest enhancement, forest enrichment and the establishment of riparian buffers. Between 2010 and 2014, the Service has provided technical assistance to more than 50 landowners participating in Farm Bill Programs such as the Environmental Quality Incentive Program (EQIP) in the Río Loco Watershed Area. Although this initiative is promoting the restoration and enhancement of suitable EWWA habitat adjacent to the MCF, the limited resources and the potential lack of participation may present a challenge for the agencies promoting these conservation initiatives.

Based on the above, the present or threatened destruction, modification, or curtailment of habitat or range continues to be a threat to the EWWA in areas adjacent to the MCF and EYNF.

B. Overutilization for commercial, recreational, scientific, or educational purposes.

These factors have not been documented as threats to EWWA.

C. Disease or predation.

Delannoy and Cruz (1999) mentioned that the Puerto Rican sharp-shinned hawks infrequently prey on EWWA. Arroyo-Vázquez (1991) and Waide (1995) suggested that native bird species such as the pearly-eyed thrasher (*Margarops fuscatus*) prey upon the species. Other potential egg and nestling predators includes the Puerto Rican Tanager (*Nesospingus speculiferus*), Puerto Rican Screech Owls (*Mefascops nudipes*), Puerto Rican Boa (*Chilabotrhus inornatus*), Puerto Rican racer (*Alsophis portoricensis*) and feral cats (*Felis catus*; Delannoy 2009). Based on the above information, predation is not an imminent threat to the species. Furthermore, there is no evidence of any disease affecting the species.

D. The inadequacy of existing regulatory mechanisms.

The EWWA is locally protected by Law No. 241-1999, known as the Puerto Rico's New Wildlife Act. The purpose of this law is to protect, conserve and enhance both native and migratory wildlife species; declare all wildlife species within its jurisdiction property of Puerto Rico; regulate permits, regulate hunting activities, and regulate exotic species, among others. Article 5 of the Law prohibits collection and hunting of wildlife species within the jurisdiction of Puerto Rico without a permit from the Secretary of the Puerto Rico Department of Natural and Environmental Resources (DNER). Law No. 241-1999 also requires authorization from the Secretary of DNER for any action that may affect the habitat of any species.

In 2004, the Commonwealth of Puerto Rico adopted Regulation No. 6766 (Commonwealth of Puerto Rico Vulnerable and Endangered Species Management Regulation) which regulates the management of threatened and endangered species in Puerto Rico. Under Regulation No. 6766, the Commonwealth of Puerto Rico listed the EWWA as a Vulnerable (VU) species, which is a species that, although not critically endangered, faces a high risk of extinction in the wild in the immediate future; a “vulnerable” status is equivalent to a “threatened” status. Regulation No. 6766 prohibits collecting, killing, or harming listed species, as well as possessing, transporting, or selling items derived from listed species. Regulation No. 6766 also requires authorization from the Secretary of PRDNER for any action that may affect the habitat of species listed under this regulation.

The MCF is protected by Law No. 133-1975 (“Ley de Bosques de Puerto Rico” or The Puerto Rico Forests Law), as amended in 2000, which prohibits damage and collection of flora and fauna in public forests. The management plan for the Maricao Commonwealth Forest provides for the protection and conservation of

species classified under PRDNER regulations as critical, threatened (vulnerable), or endangered (DNER 1976); EWWA is classified as vulnerable by PRDNER.

Additionally, the species co-exists with other federally-listed species such as the Puerto Rican sharp-shinned hawk, the Puerto Rican boa, and several listed plant species, which are subject to protection under Sections 7 and 10 of the Endangered Species Act; therefore the EWWA may benefit from indirect protection of listed species. Any Federal action, fund or permit within these forests or in private lands adjacent to these forests that affect listed species will need a Section 7 consultation under the ESA. In addition, all Commonwealth forests are designated as Critical Wildlife Areas (CWA) by the Commonwealth of Puerto Rico. The CWA designation constitutes a special recognition by the Commonwealth with the purpose of providing information to Commonwealth and Federal agencies about the conservation needs of these areas, and assisting permitting agencies in precluding negative impacts as a result of permit approvals or endorsements (DNER 2005).

El Yunque National Forest is managed by the FS. The Caribbean National Forest Act of 2005 designated 10,000 acres (4,047 ha) within the EYNF as a component of the National Wilderness Preservation System to protect habitat for the EWWA and the Puerto Rican parrot. The designation of this wilderness area confers additional protection to the habitat, where development is not permitted, and actions in this area require approval from the FS. In addition, because of the Federal Nexus, any action that may affect listed species within EYNF will need Section 7 consultation under the ESA.

Although in the past communication towers were established within the MCF's boundaries, there is a special regulatory process for the establishment of communication facilities within Commonwealth forests (Regulation No. 4745 of 1992), which requires considering critical elements, including species designated as vulnerable by the Commonwealth, and federally listed endangered species in the process. In addition, the installation of communication facilities requires authorization by the Federal Communications Commission (FCC) which will trigger Section 7 consultation with the Service under ESA.

There are existing Federal and Commonwealth regulatory mechanisms that provide protection to the EWWA and its habitat. Although this species is not federally-listed, it co-exists with federally-listed species that are protected under both Federal and Commonwealth regulations in the MCF and EYNF. Therefore, the inadequacy of existing regulatory mechanisms is not considered a threat to the EWWA.

E. Other natural or manmade factors affecting its continued existence.

Previous reviews have stated that catastrophic events such as hurricanes may affect the abundance and distribution of the EWWA. Arroyo-Vázquez (1991)



surveyed the Toro Negro and Carite forests after Hurricane Hugo in 1989 and did not detect the species. However, Tossas (2006) found that the EWWA was one of two species that, after Hurricane Georges in 1998, recovered within a year to pre-hurricane population levels; suggesting that the warblers abandoned defoliated sites immediately after the hurricane and shifted to protected patches with adequate foraging substrate and prey, until the defoliated sites recovered. It is possible that small populations may experience local extinction with these catastrophic events. However, more surveys are necessary to assess the impact of these events on habitat use patterns of the species.

Human-induced fires frequently occur within the MCF and adjacent lands, particularly during the dry season. Although the PRDNER has a fire prevention program to prevent and respond to fires in public forests, fires still a threat to the EWWA as there is always a possibility that people set fires in accessible areas of the forest. Fires may change the ecological conditions of the EWWA habitat by changing the forest structure and promoting the establishment of undesirable plant species that may be detrimental for the EWWA recovery.

Based on the above, other natural or manmade factors such as hurricanes and human-induced fires are considered as threats to the EWWA.

## XII. CONSERVATION STRATEGY

The strategy for organizing a cooperative, range-wide approach to EWWA management and conservation is focused on establishing a baseline of conservation commitments that all Parties agree to, and then collectively accounting for specific agency conservation actions across the region. Key components of a conservation strategy for EWWA are based on the premise that this Agreement, in the near term, is focused on reducing the deteriorating status of the species by improving, organizing, and implementing specific management actions.

The commitment and actions outlined in this Section focus on conservation, improvement, and ongoing management of EWWA habitat. The landscape and local level conservation actions are designed to be adaptable and implementable by all Parties in a collaborative environment, and the agency-specific actions describe the -specific actions that each Party will conduct to effectively manage the species and reduce habitat and population loss. The results of these actions will be observed through monitoring the response of EWWA populations. Information obtained from surveys and monitoring will increase the understanding of the EWWA and its management needs. This knowledge will be applied using the concepts of Adaptive Management that periodically assess and modify conservation actions.

The Conservation Strategy is identified to:

- Promote conservation actions within the MCF,

- Promote conservation actions within EYNF,
- Conduct studies to gather information on EWWA (e.g., habitat needs, habitat use, movement and activity patterns, responses to management limiting factors) in order to identify the threat or cause for decline of the species at both forests and develop new conservation strategies.

### XIII. CONSERVATION ACTIONS TO BE IMPLEMENTED

In order to accomplish the goal of this CCA, strategic conservation actions will be implemented at regional or landscape level by all Parties in accordance with their respective authorities and their individual missions.

#### Strategic Conservation Efforts:

- Developing and implementing policies that promote habitat improvement and conservation of prime habitat of the EWWA and the recovery of the species. The ESA Intra-Service consultation process for Candidate species and the National Environmental Policy Act of 1969 (NEPA) process will help guide future management action that will address the prime habitat to minimize or mitigate possible adverse effects of new construction activities and management actions with the forests.
- Developing and implementing best management practices for minimizing and/or mitigating the impacts to EWWA suitable and occupied habitats.
- Work with additional partners to identify and recommend the implementation of best management practices for mitigating impacts of agricultural practices and residential projects to suitable and occupied habitats.
- Continue identifying and collaborating with current and potential partners for the implementation of conservation/management actions needed to minimize impacts to or sustain EWWA habitat.
- Consider appropriate mitigation for projects to minimize impacts to suitable, unoccupied EWWA habitat to allow for occupation of EWWA in such areas, and managing these areas appropriately (e.g., agroforestry).
- Proactively promote outreach and education, and develop mechanisms to make EWWA information available to promote appropriate data sharing, conservation, and partnering.

#### Habitat Restoration:

- a. Implement reforestation and habitat enhancement efforts within degraded areas within the forests to restore suitable habitat for the EWWA and other Federal trust species.
- b. Develop a programmatic habitat restoration effort for EWWA habitat affected by hurricanes. A wildlife stand improvement project for the EWWA shall be a priority for both agencies after any significantly damaging hurricane or tropical storm recovery effort. For the FS this post-recovery effort may be done through a large event recovery plan report (LASER), also pending any National Environmental Policy Act (NEPA) documentation. This will include rehabilitation to physical areas and vegetation structures through FS and PRDNER regulations.

#### EWWA Ecology:

- a. Determine EWWA habitat use, movement and activity patterns in MCF and EYNF. FS has recently conducted a study to use remote audio recorders to identify the presence of the species at a latitudinal gradient in EYNF (Aide and Campos 2014).
- b. Develop distribution maps of EWWA populations within MCF and EYNF and identify suitable or potentially suitable EWWA habitat/sites/areas within both forests.
- c. Conduct research studies to identify biological factors of the EWWA within EYNA and MCF to understand necessary actions that may contribute towards population viability.
- d. Compare the EWWA distribution within EYNF with the National Wilderness Preservation System to ensure any regulations for potential actions within the El Toro Wilderness area are met.
- e. Conduct research at EYNF and MCF to understand the biology and ecology of the EWWA (e.g., survival, and breeding ecology, territorial behavior).
- f. Conduct EWWA genetic studies to determine the viability of the species.
- g. Conduct a Population Viability Analysis for the species.

#### Monitoring Efforts:

- a. Design and establish a long-term EWWA population monitoring program to conduct surveys within both MCF and EYNF and to determine the status and trend of the species.

- b. Search in new areas within the forest using different technologies such as playback techniques. FS will ensure compliance with the new Forest Plan for EYNF on such methods.
- c. Monitor the habitat restoration success and effectiveness in a short, medium and long term.

Education and Outreach:

- a. Continue with on-going education efforts to inform the general public about the EWWA.
- b. Continue promoting and implementing restoration and conservation measures through the CESFO and PRDNER Habitat Restoration Programs
- c. Develop an outreach plan to educate the public.
- d. Conduct educational activities every other year at MCF and EYNF to educate the general public about the EWWA.

#### XIV. CONSERVATION SCHEDULE AND ASSESSMENT

In order to meet the objectives of this CCA, the EWWA-TT (Section IX) shall determine an adaptable schedule for implementation of conservation strategies organized to their respective sectors.

#### XV. DURATION AND AMENDMENTS

Long-term protection and management, as outlined in this CCA, are necessary for the continued conservation of the EWWA. The initial term of this CCA shall be ten (10) years. This CCA shall be extended for additional five (5) year increments upon agreement by the parties until long-term habitat management and protection, and conservation of the EWWA, is assured. Any party may withdraw from this CCA upon sixty (60) days written notice to the other parties. Amendments to this CCA may be made upon agreement in writing of all the parties.

Any Party may propose modifications to this CCA by providing written notice to the other Parties. Such notice shall include a statement of the proposed modification and the reason for the modification. The Parties will use their best efforts to respond to proposed modifications within 60 days of receipt of such notice. Proposed modifications will become effective upon the other Parties' written approval and completion of any necessary environmental analysis.

#### XVI. EFFECT OF THE CCA IN THE EVENT OF A LISTING DECISION

It is the intent and expectation of the parties that the execution and implementation of this CCA will lead to the conservation of the EWWA. If subsequent to the effective date of this CCA the Secretary of the Interior should determine pursuant to section 4(a) of the Act (U.S.C. 1533(a)), that the EWWA is threatened or endangered then signatory parties will participate in recovery planning for the EWWA. It is also the expectation of the Parties that the conservation and management commitments made in this document will be considered in the event of a listing under the ESA.

## XVII. ADDITIONAL PROVISIONS

### A. NATIONAL ENVIRONMENTAL POLICY ACT (NEPA) COMPLIANCE

Signing of this CCA is covered under the authorities outlined in Section VII, above. We anticipate that any survey, collection, or research activities for implementation and maintenance of this CCA will not entail significant Federal actions under the NEPA. All other actions will be evaluated prior to implementation and will comply with NEPA regulations.

### B. REMEDIES

No Party shall be liable in damages for any relief under this CCA (including, but not limited to, damages, injunctive relief, personal injury, and attorney fees) for any performance or failure to perform under this CCA. Furthermore, no Party has any right of action under this CCA.

### C. NO THIRD-PARTY BENEFICIARIES

This CCA does not create any new right or interest in any member of the public as a third-party beneficiary, nor shall it authorize anyone not a Party to this CCA to maintain a suit for personal injuries or damages pursuant to the provisions of this CCA. The duties, obligations, and responsibilities of the Parties to this CCA with respect to third parties shall remain as imposed under existing law.

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XIX. FIGURES

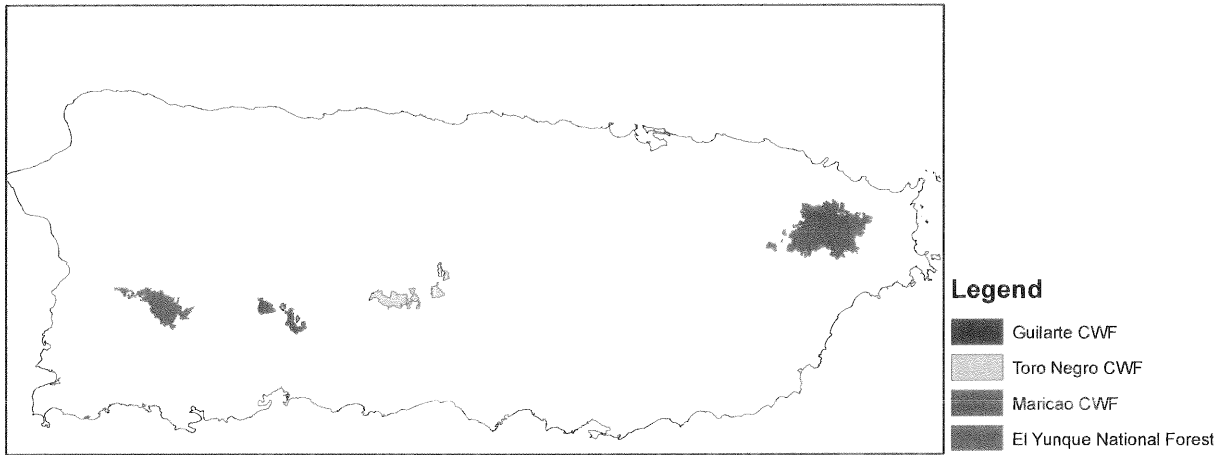


Figure 1. Former range of the EWWA.



Figure 2. Current distribution of the EWWA.



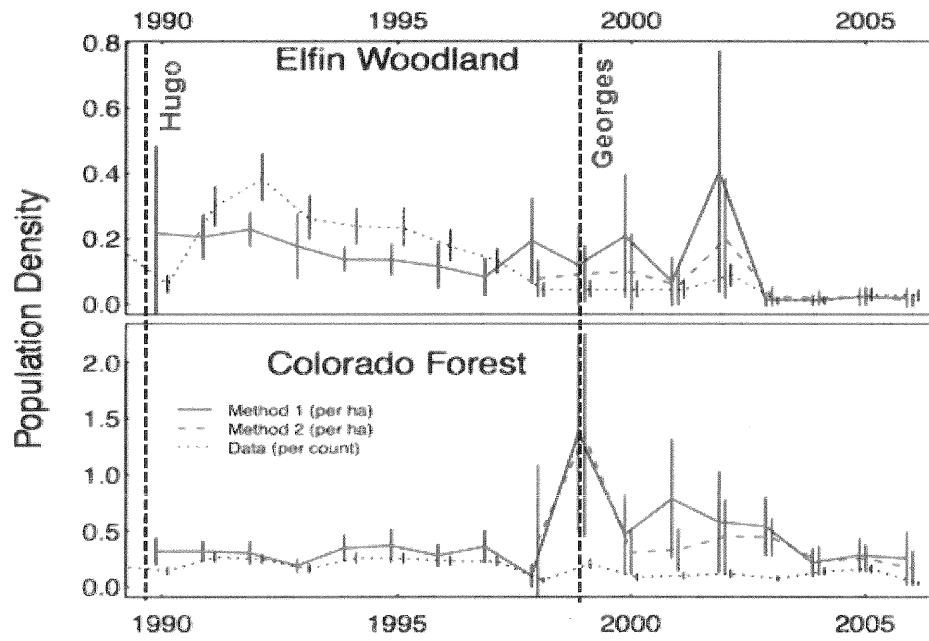


Figure 3. Estimated Elfin-woods Warbler population density (number of birds per hectare per count) (Arendt, 2013).

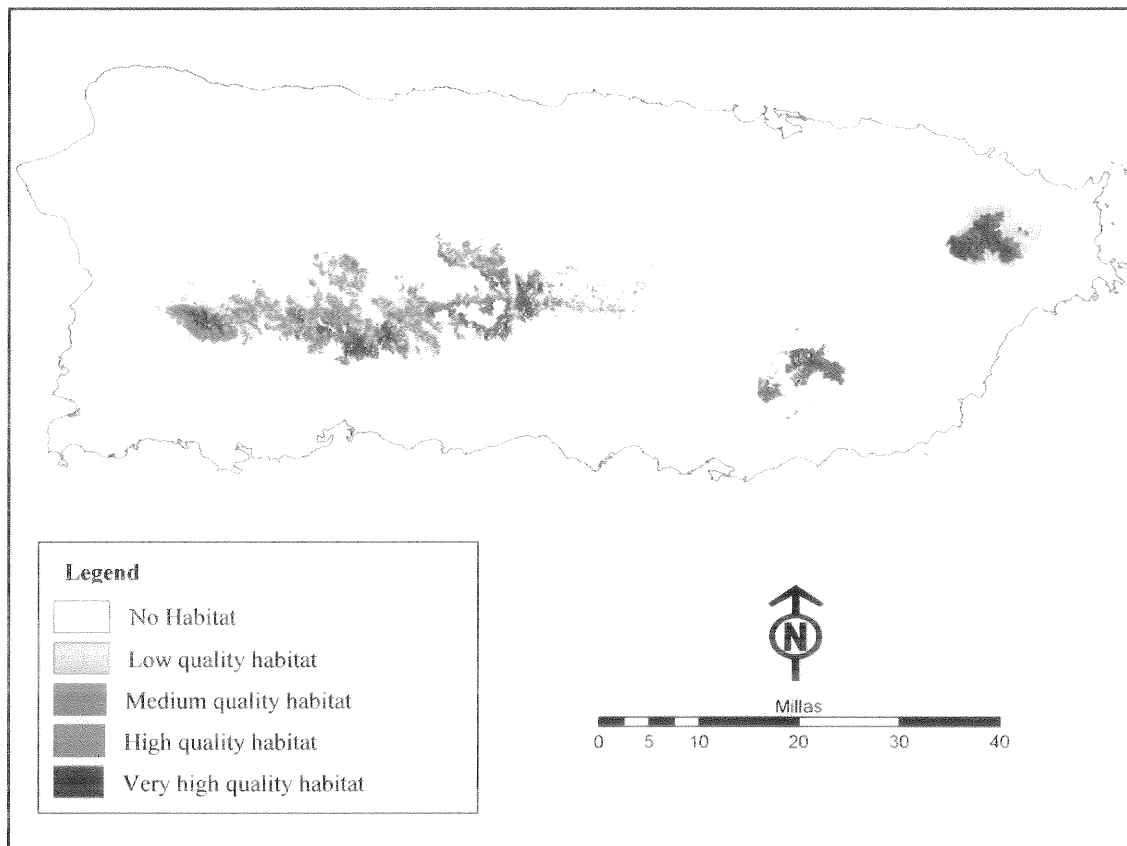


Figure 4. Elfin-woods Warbler Habitat Predictability Model (Colón-Merced 2011).

**ELFIN-WOODS WARBLER CANDIDATE CONSERVATION AGREEMENT  
SIGNATURE PAGE**

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**By signing this CCA, the organization listed below agrees to uphold the ideals and values of the CCA and hereby commits to carry out specific conservation measures as detailed in this Agreement.**



Carmen R. Guerrero-Pérez

Department of Natural and Environmental Resources

Date SEPTEMBER 24, 2014

Miguel A. García

Designated Point of Contact (POC)

787-667-6706 magarcia@drna.gobierno.pr

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Signature

LIZ AGPAOA, Regional Forester

Typed or Printed Name

USDA Forest Service, Southern Region

Agency/Organization

\_\_\_\_\_

Date

Pedro Rios

Designated Point of Contact (POC)

prios@fs.fed.us 787-888-5655

Designated POC Phone and Email

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*Cynthia K. Dohner*

Signature

*Cynthia K. Dohner*

Typed or Printed Name

*USFWS*

Agency/Organization

*9/23/2014*

Date

Designated Point of Contact (POC)

Designated POC Phone and Email

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Signature

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Typed or Printed Name

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Agency/Organization

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Date

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Designated Point of Contact (POC)

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Designated POC Phone and Email