



# United States Department of the Interior

## FISH AND WILDLIFE SERVICE


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In Reply Refer to:  
FWS/RS/ES

September 12, 2016

### Memorandum

To: Regional Director, Southeast Region

From: Assistant Regional Director for Ecological Services, Southeast Region 

Subject: Recommended Decisions in Response to Red Wolf Recovery Program Evaluation

To protect the red wolf from extinction, the Service removed the remaining red wolves from the wild in 1980 and used them to establish a breeding program with the objective of restoring the species to a portion of its former range. The red wolf recovery program currently has two main focus areas, the captive population and the Red Wolf Non-Essential Experimental Population (NEP) project.

In 2013, acknowledging growing concerns from private landowners regarding management of Service's Red Wolf NEP project in eastern North Carolina, the Service and North Carolina Wildlife Resources Commission (NCWRC) met to discuss and develop a canid management strategy. Recognizing the shared challenge of addressing coyote management within the NEP project area, the Service and NCWRC entered into a broad canid management agreement. Both agencies recognized steps were needed to improve management of the NEP project in North Carolina.

To that end in 2014, the Service contracted with the Wildlife Management Institute (WMI) to conduct an independent evaluation focused on questions within three primary elements: supporting science, program management, and human dimensions. WMI reviewed more than 200 documents, interviewed Service and NCWRC staff at various management levels, commissioned literature reviews of red wolf genetics and ecology, held two public meetings in the red wolf restoration area, and conducted public opinion surveys. In light of the findings from the WMI evaluation, the Service expanded the review in June 2015 to include the entire recovery program, beyond the NEP project in eastern NC.

The Service has taken steps to involve state partners and key stakeholders in the on-going review. A multi-faceted recovery team was established in the fall of 2015 to address current and future needs to restore red wolves in the wild. The team—comprised of representatives from federal and state agencies, university scientists, species experts, representatives from non-governmental organizations, county officials, and private landowners—was asked to review the implementation of recovery actions, the science behind red wolf conservation, including

taxonomy, historical range and population viability, and the confounding challenges of human dimensions to red wolf recovery.

This document presents a proposed path forward for red a wolf recovery program, including the eastern NC NEP project. It is based on the evaluation of red wolf recovery program led by the Red Wolf Recovery Team and WMI and other ecological and social science research conducted over the past year, including work on canid taxonomy underway with the U.S. Geological Survey and the North Carolina State University, human dimensions research being conducted by the NC Wildlife Resources Commission, and population modeling work recently completed by a team from the Red Wolf Species Survival Plan (SSP) partners. All referenced materials are included in the attached Red Wolf Recovery Team Report and can be found on our red wolf evaluation web page (<https://www.fws.gov/redwolf/evaluation.html>). Two decision recommendations are included in this memorandum. The first is a recommendation on the future of the red wolf recovery program and the second recommendation is specific to the future of the NC NEP project.

## **I. DECISION REGARDING THE FUTURE OF THE OVERALL RED WOLF RECOVERY PROGRAM**

### SUMMARY OF KEY ISSUES:

#### **Genetics**

Many of the country's leading canid geneticists, as well as taxonomists and legal scholars, were convened by the U.S. Geological Survey and the North Carolina State University to discuss the taxonomic classification of the red wolf (*Canis rufus*). The executive summary of this meeting can be found on our red wolf program evaluation web page cited above. This group was given the goal of determining if the current genetic evidence supports the red wolf remaining a "listable" entity under the Endangered Species Act (ESA). This group included scientists with very differing hypotheses as to the origin of the red wolf. There are currently five different evolutionary hypotheses that fall into two primary groups, the Modern North American Canis Taxonomic Hypotheses and the PreColumbian North American Canis Taxonomic Hypothesis.

The experts could not agree on the historic genetic lineage of the red wolf, but the majority of the group concluded that the red wolf is a listable entity under the ESA. They differ in their perspectives within this determination as to whether it should remain a distinct species, a subspecies, a "modern hybrid" protected (see vonHold et al. 2016) under ESA or a distinct population segment (DPS) of *Canis lupus* or *Canis lycaon*. While this depends on the interpretation of what a DPS is, all workshop participants recognized the logical and credible path that would lead them to conclude that the red wolf is a listable entity under the ESA. These preliminary conclusions will eventually be evaluated and published in a peer reviewed journal.

Subsequent to the workshop, a new peer reviewed study was published by several researchers (including two that participated in the workshop) which concluded that all North American canids are either coyotes, grey wolves or hybrids thereof (von Holdt et al, 2016), consistent with the Modern North American Canis Taxonomic Hypothesis. As in the past, we know that other researchers are analyzing the same issues and will most likely publish differing articles on this

topic. At this time, given this ongoing debate regarding red wolf historical genetic origin, the red wolf remains a listed entity under the ESA, and all recommendations hence forth in this memorandum are based on this fact.

### **Historical Range**

The red wolf historical range has been the center of controversy due to different interpretations and the limited amount of historical specimens and data. The Wildlife Management Institute was commissioned to investigate this issue and provide their assessment to the Service. After analyzing multiple datasets from museums and other sources, they concluded that the historical range of the Red Wolf may actually be larger than what was last officially used by the Service. This conclusion was reached by overlaying eco-regional data with museum specimen location data.

### **Captive Breeding Population**

The Red Wolf Population Viability Analysis (PVA) workgroup, consisting primarily of Species Survival Plan (SSP) partners, recently completed a Population Viability Analysis (PVA) for both the SSP population and the wild population (Faust et al. 2016). The Service is putting special attention to the two scenarios closer to current conditions (i.e., scenarios A and FF; Baseline and Current pair limitation, respectively). Results of these two scenarios indicate that with only 29 breeding pairs (current situation) the captive SSP population is unable to sustain itself in the foreseeable future and declines.

The species is not secured in captivity. In order to support itself, the captive breeding population of red wolves must increase to approximately 400 animals with a minimum of 52 breeding pairs. These values are approximate numbers due to the fact that the model outputs offer a range of population targets and different scenarios have different sets of assumptions. These targets greatly exceed the current captive breeding facilities capacity (n=225 and approximately 29 breeding pairs). This is a significant finding that, if not managed immediately, would put the entire species in peril. By far, we can say that this is the number one management priority for the red wolf recovery program.

Releases from captivity are essential to any wild population long-term success. For that, we need a robust captive population that must first secure the species survival and will, secondarily, strongly support the establishment of new NEP projects in the future. In addition, to support a sustainable captive breeding population, it is clear that more animals (above the 400 individual targets) are needed in captivity to support any wild population (including the current NEP). The SSP population has the potential to be demographically strong, but additional space and improved breeding rates are needed to improve its outcomes in support of the entire red wolf recovery program.

## **Wild Population & Hybridization**

Hybridization with coyotes is the existential threat to the red wolf, and it is an ongoing challenge to the recovery of the red wolf. It is exacerbated by human-related mortality, particularly when those mortality events occur just prior to breeding season and affect key breeding individuals (i.e., breeding females, dominant males) within a wolf pack. There are multiple significant challenges to sustainably managing these threats and establishing viable populations of red wolves in a southeastern landscape overwhelmingly (approximately 90%) comprised of private lands occupied by coyotes. As a result, for the foreseeable future the red wolf is considered a conservation-reliant species for which efforts to sustain it in the wild will require intensive hands-on management. Even with this intensive management the challenges of controlling hybridization are strong. For example, Gese et al. (2015) has concluded that the success of the red wolf adaptive management program at controlling hybridization was mixed. Although the NEP project has managed to keep hybrids to 4% of the known wild red wolf population, the number of coyote-wolf hybrids detected over time did not decrease and the ratio of hybrids to pure red wolf litters did not decline either. In fact, a recent study published by Murray et al (2014) concluded that basic conditions conducive to red wolf population self-sufficiency simply have not been achieved. Even with improved wolf survival and recruitment in the wild NEP population the red wolf may not have sufficient demographic advantage to override the perpetual colonization of the NEP area by coyotes/hybrids. It may not be possible to achieve competitive exclusion of coyote/hybrids by red wolves in eastern North Carolina (Murray et al. 2014).

## **Community relations**

Recovery efforts involving reintroduction of large carnivores are inherently controversial, especially to the local communities. The fact that red wolf conservation inevitably means reintroducing a large carnivore onto a landscape dominated by private lands makes red wolf conservation uniquely challenging. It is a fact that without private landowner support we will not be able to recover the red wolf. Due to the importance of private lands to red wolf conservation (over 90% private land ownership in the Southeast), socio-political factors are as important if not more important than ecological factors. Fundamental change is needed in the way stakeholders are engaged in management of wild-ranging red wolf populations. This change must not be limited to the natural sciences; it must also include the use of social, economic and political sciences in combination with natural sciences like biology and ecology.

The importance of private lands notwithstanding, any additional suitable NEP project sites will require a sizable federal land base to function as an anchor for population establishment and management activities. Ideally, these federal land anchors should be surrounded by other sizable lands on public or private ownership with habitat conditions that could support a sustainable population of red wolves.

## **Decision Options**

The following management options were examined:

**Option 1.** Status Quo or continue to put the majority of Red Wolf Recovery Program resources into managing a single NEP project in North Eastern North Carolina.

**Option 2.** Continue to support the Red Wolf Recovery Program with significant shifts in the resource allocation in order to secure the SSP population and evaluate potential new NEP project sites across the historical range of the species.

**Option 3.** Reduce the Red Wolf Recovery Program to the regulatory standards required by the ESA (e.g., no active management, regulatory compliance only).

## **Recommendation**

We recommend Option 2: Continue to support the Red Wolf Recovery Program with significant shifts in the resource allocation to secure the captive SSP population and evaluate potential new NEP project sites across the historical range of the species. As described earlier, we have just discovered that the SSP population is not secure. The short term objective for the red wolf recovery program must be a shift toward securing the species by fully supporting the SSP population.

The Service will shift its limited resources towards:

1. Securing the SSP population by providing resources to the SSP partner institutions to increase capacity and reach the biological goal of a minimum of 400 animals with 52 breeding pairs. We use this specific population goal as our target to sustain the SSP population.
2. Developing a Species Status Assessment to guide recovery actions.
3. Develop the statutory 5-yr review.
4. Identify other potential NEP project areas across the historical range.
5. Grow the SSP above the minimum required (over 400 animals) so the program could establish new NEP projects within the red wolf historical range.

This recommendation will require the following implementation actions:

1. We will work immediately with the SSP and other partners to expand space capacity within the SSP by December 2017.
2. We will initiate the 5-year review process by publishing a Notice of Initiation in the Federal Register by October 30, 2016 and a final document by October 2017.
3. We will identify potential new NEP project sites within the historic range by October 2017 (as part of the 5-yr review).
4. The Service will work with our science partners to develop a Species Status Assessment (SSA) by October 2017. This SSA will be used as the basis for a new Red Wolf Recovery Plan.

These actions will result in a red wolf recovery program that is solidly placed on a sound conceptual, scientific, legal, and public policy foundation.

**REGIONAL DIRECTOR'S DECISION**

- APPROVE
- APPROVE WITH CONDITIONS
- DISAPPROVE

COMMENTS:

**II. DECISION REGARDING THE FUTURE OF THE NEP PROJECT**

**SUMMARY OF KEY ISSUES:**

It is clear that the current direction and management of the NENC NEP project is unacceptable to the Service and all stakeholders (Recovery Team Final Report 2016). The PVA indicates that continuing current management of the NEP project will likely lead to its extirpation in as few as 8 years. Currently, the population is declining more rapidly than the worst case PVA projections.

The current NEP project population estimate is a minimum of 28 monitored individuals consisting of 5 packs (which includes only 3 known breeding pairs) widely distributed across the 5 county NEP project area. Many of these animals occur on lands to which the Service does not have access, which contributes to our uncertainty regarding the size of the population (currently estimated to be around 45 animals). Risks of continued hybridization, human-related mortality, continued loss of habitat due to sea level rise and continued population decline are high. In fact, a recent study (Gese et al. 2015) concluded that ideally red wolves would fully occupy the entire area of the NEP project and coyotes entering the area would be excluded by resident red wolves. But the authors believe this is an unlikely scenario because wolf habitat within the NEP is discontinuous and future changes in the habitat will favor coyotes. At 90 to 95 adult red wolves in the early 2000's, the population may have reached its carrying capacity. Consistent with this, the habitat model developed by Dellinger et al. (2013) suggested that red wolves are patchily distributed across the NEP project area. Finally,

Gese et al. (2015) noted that the high rate of human caused mortality (e.g., vehicular strikes, gunshot) leading to hybridization may also be limiting. Similarly, the leading canid geneticists convened by the USGS also concluded that these factors (e.g., human caused mortality, small population size, low public support) lead to poor prospects of the NEP project.

However, according to the most recent PVA, many of the animals that remain in the NEP project area would benefit the captive SSP population if the capacity to increase the population is provided. Due to this new reality, the goals and objectives of the current NEP project must change from trying to establish a self-sustaining population to a goal of directly supporting the SSP population in order to protect the species from extinction.

Despite the significant challenges and limitations facing the NEP project, maintaining a small, and more manageable wild population remains important to fostering the species in the wild. Maintaining a smaller wild population fully integrated with the SSP will:

1. Allow for animals removed from the wild to support the necessary expansion and improved genetic health of the SSP;
2. Retain some of the influences of natural selection on the meta-population gene pool;
3. Serve as a small stock source for new reintroduction efforts across the historical range; and
4. Provide a population for continued research on wild behavior.

## DECISION OPTIONS

The following management options were examined.

**Option 1.** Status Quo or operate the NEP project within the bounds of the current 10(j) rule.

**Option 2.** Publish a proposed new rule to change the size, scope and management of the current NEP project to protect the species by growing the SSP to a minimum of 400 animals with 52 breeding pairs.

**Option 3.** Propose a new rule to discontinue the NEP project entirely.

## RECOMMENDATION

We recommend Option (2): Publish a proposed new rule to change the size, scope and management of the current NEP project to protect the species by growing the SSP to a minimum of 400 animals with 52 breeding pairs.

We recommend reducing the focus of NEP project to federal lands within Dare County with a

view towards maximizing efficient use of Service resources during the transition/planning period described above. Focusing efforts to federal lands is necessary to re-establish management control over the population by removing isolated wolf packs from lands to which the Service lacks access, incorporating these animals into the SSP population, and to better manage the remaining animals to accessible areas (federal lands in Dare County) in order to minimize and manage risks of hybridization. We are focusing on Dare County because throughout the history of the program, it has been demonstrated that the existing packs in Dare County can persist and we have full access to all federal lands there.

The transition to a one-county NEP project will start with focused efforts to manage wolves occupying the federal lands of Dare County. These focused management efforts will include management techniques such as monitoring of the population, animal husbandry, controlling coyotes and hybrids as well as honoring the removal requests from private lands, following the procedures authorized under the current 10(j) rule.

The proposal will seek to authorize the movement of animals between the captive and wild populations in order to grow the SSP and maintain genetic diversity for both SSP and wild populations. In other words, the current captive SSP population and the new “wild NEP SSP population” will be managed as one single meta-population as strongly suggested by the PVA model. In fact, bringing animals from the wild into the SSP population could bring significant benefits in securing the species viability by capturing and increasing the genetic diversity to up to 87.1%. These benefits are achievable only if additional spaces are provided to increase the captive breeding SSP population. If possible (after complying with state and federal regulations), sterilized placeholder canids could be used within federal lands to help reproductively isolate wolves from coyotes if necessary. This will result in a smaller NEP project in terms of population size, number of packs/breeding pairs, and area occupied. However, for the first time in the history of the recovery program, this wild NEP population will be managed together with the SSP population as one meta-population.

We fully acknowledge that even with this refocused and more efficient effort, we cannot restrict wolves on federal lands in Dare County. The NEP protections to the species will be limited to Dare County. However, we will still seek written agreements with **willing adjacent** landowners to facilitate management of the remaining wolves. Any wolves removed from the landscape will be handled and cared for humanely. This will necessitate capital investments in captive infrastructure.

This recommendation will require the following implementation actions:

1. The NEP project will be refocused to federal land, requiring that a new 10(j) rule be promulgated in the immediate future that proposes to reduce the NEP area to federal lands in Dare County, to terminate the NEP if it is no longer providing a contribution to recovery goals, allows for appropriate use of all management tools for population management and redefines the rights of private landowners formerly but no longer within the NEP area. Until a new rule is proposed, gone through the public comment process and finalized (target date December 2017), the existing NEP project will continue to be managed consistent with the confines of the current 10(j) Rule. A new rule will require



additional environmental compliance processes (e.g., ESA consultation, NEPA) and the Service is committed to complete these as required by the law.


2. The remaining NEP animals will be managed as part of the SSP requiring capital improvements to Service and SSP partner facilities to accommodate additional animals.
3. Re-establishment of small island populations within the National Wildlife Refuge System will be necessary. Potential island sites should be evaluated across the red wolf historical range.

The complexity and scale of the above efforts will require more resources than what the Service and our SSP partners have available. There needs to be a *Call to Action* to all partners and landowners to help support these actions and to continue to apply the tremendous body of knowledge developed to be able to safeguard this species and to eventually achieve recovery of the red wolf.

#### REGIONAL DIRECTOR'S DECISION

- APPROVE  
 APPROVE WITH CONDITIONS  
 DISAPPROVE

COMMENTS:

  
Cynthia K. Dohner,  
Regional Director

  
Date

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