

# Red Wolf Recovery Program



*Photo credit: Jeffrey Mittelstadt*

## 1<sup>st</sup> Quarter Report (revised)

**October - December 2011**

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[www.fws.gov/redwolf](http://www.fws.gov/redwolf)



[trackthepack.blogspot.com](http://trackthepack.blogspot.com)



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# The Red Wolf Recovery Program

The red wolf (*Canis rufus*) is one of the most endangered canids in the world. Once occurring throughout the eastern and south-central United States, red wolves were decimated by predator-control programs and the loss and alteration of habitats. By the 1970s, these activities had reduced the red wolf population to a small area along the Gulf coast of Texas and Louisiana. To protect the species from extinction, the U.S. Fish and Wildlife Service initiated efforts to locate and capture as many red wolves as possible for the purposes of establishing a program to breed the species in captivity and one day reintroduce the species into a portion of its former range. More than 400 canids were captured in coastal areas of Texas and Louisiana, but only 17 were identified as pure red wolves. Fourteen of these wolves would become the founding members of the captive-breeding program and the ancestors of all red wolves existing today.

The first litter of red wolves born in captivity occurred in 1977. Within a few years red wolves were successfully reproducing in captivity, allowing the U.S. Fish and Wildlife Service to consider reintroducing the species in the wild. In 1987, four male-female pairs of red wolves were released in Alligator River National Wildlife Refuge (ARNWR) in northeastern North Carolina and designated as an experimental population. Since then, the experimental population has grown and the recovery area expanded to include four national wildlife refuges, a Department of Defense bombing range, state-owned lands, and private lands, encompassing about 1.7 million acres.

## Adaptive Management

The recovery and restoration of red wolves requires the careful management of eastern coyotes (*C. latrans* var.) and occasionally wolf-coyote hybrids in the red wolf recovery area. The non-native coyotes spread across North Carolina to the red wolf recovery area in the early to mid-1990s. It soon was recognized that interbreeding between red wolves and eastern coyotes would produce hybrid offspring resulting in coyote gene introgression into the wild red wolf population, and that this introgression would threaten the restoration of red wolves. An adaptive management plan was developed to reduce interbreeding and introgression while simultaneously building the red wolf population. The adaptive management plan effectively uses techniques to capture and sterilize hormonally intact coyotes via vasectomy or tubal ligation, then releases the sterile canid at its place of capture to act as a territorial “placeholder” until the animal is replaced by wild red wolves. Sterile coyotes are not capable of breeding with other coyotes, effectively limiting the growth of the coyote population, nor are they capable of interbreeding with wild red wolves, limiting hybridization events. In addition, the sterile canid will exclude other coyotes from its territory. Ultimately, the placeholder canids are replaced by the larger red wolves either naturally by displacing the coyote or via management actions (e.g., removal of the coyote followed by insertion of wild or translocated wolves). Coyotes that are captured on private property are euthanized at the landowner’s request.

Currently, adaptive management efforts are making progress in reducing the threat of coyotes to the red wolf population in northeastern North Carolina. Other threats, such as habitat fragmentation, disease, and anthropogenic mortality, also are of concern in the restoration of red wolves. Efforts to reduce these threats are presently being explored.

## Program Objectives

The current recovery plan (U.S. Fish and Wildlife Service, 1990) specifies the following objectives:

- 1) Establish and maintain at least three red wolf populations via restoration projects within the historic range of the red wolf. Each population should be numerically large enough to have the potential for allowing natural evolutionary processes to work within the species. This must be paralleled by the cooperation and assistance of at least 30 captive-breeding facilities in the United States.
- 2) Preserve 80% to 90% of red wolf genetic diversity for 150 years.
- 3) Remove threats of extinction by achieving a wild population of approximately 220 wolves and a captive population of approximately 330 wolves.

- 4) Maintain the red wolf into perpetuity through embryo banking and cryogenic preservation of sperm.

## The Red Wolf Population

*We estimate between 90 and 110 red wolves in the Red Wolf Recovery Area, but for the purposes of this report all population figures are comprised only of known canids (i.e., those that are regularly monitored through either a functioning radio-collar or surgically implanted abdominal radio transmitter). Additional wolves are likely present, but have not been captured/radio-collared or their continued presence otherwise confirmed.*

*Beginning with the first quarter of the fiscal year 2012 (FY12) we have changed the way we report population and pack numbers. This change more accurately represents the managed population of canids that are part of our efforts to restore red wolves. The managed population includes wolf packs (i.e., packs consisting entirely of wolves) and mixed packs (i.e., packs of a wolf and coyote pair). A pack is defined as at least two known canids cooperatively inhabiting an established territory.*

### Population and Territory Status

A total of 66 known red wolves occupied the Red Wolf Recovery Area (i.e., 1.7 million acres in five counties in northeastern North Carolina) at the end of the first quarter of our fiscal year 2012 (FY 12). The population includes 16 wolf packs (comprised of 42 wolves and 11 breeding pairs), and five mixed packs (comprised of 5 wolves and 5 coyotes). An additional 19 wolves are not known to be associated with a pack. A total of 41 sterile coyotes were monitored in the Red Wolf Recovery Area at the end of this quarter.

### Pairings

Two breeding pairs of red wolves were lost and two wolf pairs were formed during the quarter. Both breeding pair losses were the result of gunshot mortality to one member of the pair.

Two mixed pairs (wolf-coyote) were lost and one mixed pair formed during the quarter. One of the losses was the result of gunshot mortality of a sterile male coyote. The other loss was the result of displacement of a sterile female coyote by a female wolf.

### Captures and Radio Telemetry Marking

Five red wolves were captured during the quarter, none of which were first-time captures. All wolves were fitted or re-fitted with radio-telemetry collars (VHF or GPS) or surgically implanted with abdominal radio transmitters, and released. Captured red wolves consisted of three males and two females; three adults (> 2 years of age) and two juveniles (1-2 years of age).

Nine coyotes were captured and released during the quarter, seven of which were first-time captures. The first-time captured coyotes were sterilized before being radio-collared and released. The other two coyotes were previously sterilized; their radio collars were replaced before release. Captured coyotes consisted of five males and four females.

### Dispersals and Displacements

Two known juvenile wolves (1 male, 1 female) dispersed from their natal territories during the quarter.

Three sterile female coyotes were displaced from their respective territories by wolves during the quarter.

## Mortalities

Nine wolves (6 males, 3 females) from the Red Wolf Recovery Area are known to have died during the quarter. Mortalities consisted of five adult wolves and four juveniles. Two of the deaths were the result of management actions that are defined as legal take, including one wolf that was taken in defense of property because it exhibited tolerance behavior. Seven of the deaths were the result of suspected illegal take and are currently under investigation by the U.S. Fish and Wildlife Service's Office of Law Enforcement.

Six sterile, radio-collared coyotes also were known to have died during the quarter. Four of the deaths were the result of gunshot. The cause of death could not be determined for two coyotes.

The first quarter corresponds with the rifle hunting season in eastern North Carolina.

## Disappearances

The Red Wolf Recovery Program lost radio contact with a juvenile female wolf and three coyotes (1 male, 2 females) during the quarter.

## Pack Summaries

*The Pack Summaries section has been indefinitely discontinued due to recent events and current circumstances involving the apparent illegal take of red wolves within the Red Wolf Recovery Area.*

# Collaborations

## Research

The Red Wolf Recovery Program provided financial and in-kind support for collaborative research with scientists at other institutions, including universities, interagency divisions, and non-government research organizations. These investigations required project staff to assist outside researchers and graduate students in their efforts to better understand red wolf ecology, ecosystem function, and conservation efforts.

*Project Title:* Inbreeding and mate choice in wild red wolves.

*Graduate Student:* Kristin Brzeski (PhD student)

*Committee Chair/Principal Investigator:* Sabrina Taylor, PhD, Louisiana State University

*Project Title:* Identifying management procedures to reduce red wolf-coyote interactions in eastern North Carolina.

*Graduate Student:* Joseph Hinton (PhD student)

*Committee Chair/Principal Investigator:* Michael Chamberlain, PhD, University of Georgia

*Project Title:* Use of stable isotope analysis to elucidate predation patterns of sympatric canids.

*Graduate Student:* Anne-Marie Hodge (MS student)

*Committee Chair/Principal Investigator:* Brian Arbogast, PhD, University of North Carolina at Wilmington

*Project Title:* Evaluating potential effects of widening US Highway 64 on red wolves, Washington, Tyrrell, and Dare Counties, North Carolina.

*Graduate Student:* Christine Proctor (PhD student)

*Committee Chair/Principal Investigator:* Michael R. Vaughan, PhD, Virginia Polytechnic Institute and State University (Virginia Tech)

*Project Title:* Sperm morphology and motility of the red wolf (*Canis rufus*).

*Graduate Student:* n/a

*Committee Chair/Principal Investigators:* Albrecht Schulte-Hostedde, PhD, Laurentian University, and Gabriela Mastromonaco, PhD, Toronto Zoo

## **Publications**

The following publications have gone to print in this quarter. A complete list of publications related to red wolves can be found at <http://www.fws.gov/redwolf/biblio.html>.

Dellinger, J.A., B.L. Ortman, T.D. Steury, J. Bohling, and L.P. Waits. 2011. Food habits of red wolves during pup-rearing season. *Southeastern Naturalist* 10:731-740.

Karlin, M., and J. Chadwick. 2011. Red wolf natal dispersal characteristics: comparing periods of population increase and stability. *Journal of Zoology* [early publication online at <http://onlinelibrary.wiley.com/doi/10.1111/j.1469-7998.2011.00876.x/abstract>].

Mech, L.D. 2011. Non-genetic evidence for the eastern wolf. *Northeastern Naturalist* 18:521-526.

Schneider, J.N., and R.E. Anderson. 2011. Tonal vocalizations in the red wolf (*Canis rufus*): potential functions of nonlinear sound production. *Journal of the Acoustical Society of America* 130(4): 2275-2284.

## **Presentations**

Brzeski, K.E., S. Taylor, M.J. Chamberlain, D.R. Rabon, Jr. 2011. Inbreeding in wild red wolves. Program. The Wildlife Society's 18<sup>th</sup> Annual Conference, November 5-10, Waikoloa, Hawaii.

Karlin, M., and J. Chadwick. 2011. Predicting red wolf and coyote/hybrid animal relative habitat suitability on the Albemarle Peninsula, NC, using a presence only species distribution model. Program. The Wildlife Society's 18<sup>th</sup> Annual Conference, November 5-10, Waikoloa, Hawaii.

Rabon, D.R., Jr. 2011. Reintroduction of the critically endangered red wolf (*Canis rufus*). The Giant Panda Reintroduction Workshop, October 26-27, Dujiangyan, China.

## **Staff and Volunteers**

The Red Wolf Recovery Program employs eight full-time staff, including the program coordinator, four wildlife biologists, a biological technician, a public affairs/outreach coordinator, and an administrative assistant. The public affairs/outreach coordinator and administrative assistant positions are currently vacant. The Red Wolf Recovery Program also benefits from an unpaid intern (Caretaker).

## **Outreach**

Staff from the Red Wolf Recovery Program conduct presentations and attend events to inform and educate the public on the conservation needs of the red wolf and the restoration efforts of the Red Wolf Recovery Program. As part of our effort to assist educators, red wolf "discovery boxes" that include materials about the red wolf are distributed to educational facilities. The distribution of discovery boxes is managed by the Red Wolf Coalition (see Partnerships). Requests for discovery boxes should be made to [kwheeler@redwolves.com](mailto:kwheeler@redwolves.com).

The Red Wolf Recovery Program also seeks to achieve a quality visitor and participant experience in the U.S. Fish and Wildlife Service's priority recreational uses on National Wildlife Refuges. Our outreach efforts focus on four of the six program elements, including wildlife observation, wildlife photography,

environmental education, and interpretation, and are conducted frequently in partnership with ARNWR and PLNWR educators and volunteers.

## **Presentations**

| Date       | Location          | Audience                                | Length | Attendance | Presenter                             |
|------------|-------------------|---|--------|------------|---------------------------------------|
| October 26 | Dujiangyan, China | The Giant Panda Reintroduction Workshop | 1 hr   | ~60        | D. Rabon                              |
| October 26 | Kitty Hawk, NC    | Wild Fest                               | 5 hrs  | 250        | A. McGarry<br>D.J. Sharp<br>F. Willis |

## **Howlings**

| Date        | Location | Event            | Length | Attend | Presenter                |
|-------------|----------|------------------|--------|--------|--------------------------|
| October 15  | ARNWR    | Wolf-Awareness   | 2 hrs  | 45     | A. McGarry<br>D.J. Sharp |
| October 29  | ARNWR    | Howl-o-ween      | 2 hrs  | 50     | A. McGarry<br>D.J. Sharp |
| November 9  | ARNWR    | Wings Over Water | 2 hrs  | 27     | A. McGarry<br>D.J. Sharp |
| November 11 | ARNWR    | Wings Over Water | 2 hrs  | 11     | A. McGarry<br>D.J. Sharp |
| December 10 | ARNWR    | Full Moon Howl   | 2 hrs  | 35     | C. Heffley<br>D.J. Sharp |

## **Website / Social Media**

Information on the red wolf and the Red Wolf Recovery Program can be found on our website at [www.fws.gov/redwolf](http://www.fws.gov/redwolf).

The Red Wolf Recovery Program also maintains several social media sites. Our Facebook page ([www.facebook.com/redwolfrecoveryprogram](http://www.facebook.com/redwolfrecoveryprogram)) connects our program with “friends” from around the world and informs them of the conservation efforts of the Red Wolf Recovery Program. Using Twitter, the Red Wolf Recovery Program connects with our “followers” by providing real-time information about all things red wolf. Follow us on Twitter at [www.twitter.com/redwolfrecovery](http://www.twitter.com/redwolfrecovery). Users can view and download high resolution pictures related to red wolves and the Red Wolf Recovery Program on our Flickr page ([www.flickr.com/photos/trackthepack](http://www.flickr.com/photos/trackthepack)). Lastly, discover, watch, and share videos on red wolves on our YouTube site ([www.youtube.com/trackthepacktube](http://www.youtube.com/trackthepacktube)).

The Red Wolf Recovery Program also has a weblog that highlights the efforts of the Red Wolf Recovery Program staff in the conservation of the red wolf. The weblog combines text, images, videos, and links to other media related to its topic. The content includes educational, informational, and general journal entries written by program staff, and allows readers to leave comments in an interactive format. The weblog can be found at [trackthepack.blogspot.com](http://trackthepack.blogspot.com).



## Media Inquires

The Red Wolf Recovery Program responded to numerous media inquiries during this quarter, including science writer DeLene Beeland ([www.delene.us](http://www.delene.us)), who is writing a book about red wolves, and Jeffrey Mittelstadt, a graduate student from the University of North Carolina at Chapel Hill's School of Journalism, who is producing a number of video and mixed-media projects on red wolf restoration.

## Partnerships

### Species Survival Plan (SSP)

Species Survival Plan (SSP) captive facility coordination is based at Point Defiance Zoo & Aquarium (PDZA) in Tacoma, Washington. The SSP currently coordinates 40 captive red wolf sites at zoos and nature centers housing about 178 wolves. The following information is based on activities completed or conducted by the SSP Coordinator during the quarter reported. Additional information on the SSP can be found at [www.fws.gov/redwolf](http://www.fws.gov/redwolf) or [www.pdza.org](http://www.pdza.org).

The SSP Coordinator reported numerous correspondence and communications regarding red wolves, including coordinating the transfer of wolves to accommodate SSP institutional requests and completing the application process to grant North Carolina State University SSP status to house captive red wolves. The SSP Coordinator also completed and distributed to cooperating SSP institutions the final breeding and transfer recommendations for the 2001-2012 breeding season.

The SSP Coordinator submitted an application for export permit to provide additional samples for study (Laurentian University and Toronto Metro Zoo) to evaluate the effects of inbreeding on several sperm morphology parameters. The SSP Coordinator also completed reproductive ultrasound examinations on 11 female wolves in conjunction with a study being conducted by Kadie Anderson, DVM, PDZA Intern Veterinarian, to evaluate the prevalence of cystic endometrial hyperplasia in a subset of the SSP population of red wolves.

### Island Propagation Sites

The U.S. Fish and Wildlife Service utilizes island sites to propagate red wolves and contribute to the restoration of a wild red wolf population, primarily by inserting island-born wolves into the wild population as a means to augment the wild red wolf gene pool with "under-represented" genes from the captive population. Currently, the Red Wolf Recovery Program cooperates with St. Vincent National Wildlife Refuge in maintaining a breeding pair of red wolves on an island site.

### Red Wolf Coalition

The Red Wolf Coalition (RWC), a non-profit education organization based in Columbia, NC, advocates for the long term survival of wild red wolf populations by teaching about red wolves and by engaging the public in red wolf conservation. The RWC's web site ([www.redwolves.com](http://www.redwolves.com)) provides information about the history, biology, and ecology of red wolves, as well as news about red wolf restoration. The RWC gives red wolf programs to school groups, professional organizations, university students, and other groups. The RWC also conducts workshops for teachers and non-formal educators, including people seeking certification in environmental education.

The RWC has obtained the necessary funds from the U.S. Department of Agriculture's Rural Development and from a generous gift from the North Carolina Zoological Society to construct the red wolf viewing facility at PLNWR in Columbia, NC. The red wolf viewing facility will include the construction of several enclosures to house red wolves, including a natural environment enclosure designed to showcase red wolves to the visiting public. The RWC also received a cash prize in the Chase Community Giving Challenge. In addition, the RWC Executive Director reported that General Mills Corporation

(Minneapolis, MN) selected the RWC to be one of three non-profits to work with a team of the company's marketing experts on fundraising, branding, and expanding the reach and effectiveness of the organization.

The RWC Executive Director reported conducting several education programs during the quarter, including participating in the Scuppernon River Festival (Columbia, NC); hosting about 150 people of all ages at a two-night red wolf event at the North Carolina Museum of Life and Science (Durham, NC); giving a presentation about red wolves to 20 Columbia (NC) high school students; assisting a mentored high school student with her senior presentation on red wolves at the Plymouth Christmas Festival (Plymouth, NC); and, giving presentations about red wolves to two classes at Edenton High School (Edenton, NC).

The RWC Executive Director and RWC Board of Directors chair (Neil Hutt) gave an all-day teacher workshop at the RWC office (Columbia, NC). Participants included public school teachers, environmental education certification candidates, and agency personnel. The next teacher workshop will be held on April 26, 2012, at the NC Museum of Life and Science (Durham, NC). Contact Kim Wheeler at 252-796-5600 or [kwheeler@redwolves.com](mailto:kwheeler@redwolves.com) for information and details.

The RWC also has three Red Wolf Discovery Boxes for all grade levels. These boxes are filled with a variety of hands-on items, activities and artifacts that help students explore the world of red wolves. The red wolf curriculum *Far Traveler* and a variety of books and other resources also are included. Contact Kim Wheeler at 252-796-5600 or [kwheeler@redwolves.com](mailto:kwheeler@redwolves.com) for more information or to reserve your Red Wolf Discovery Box.

## Announcements

The U.S. Fish and Wildlife Service is investigating the suspected illegal take of several red wolves found dead in the Red Wolf Recovery Area (Dare, Hyde, Tyrrell, Washington, and Beaufort Counties, NC). Contributions from various organizations and individuals have resulted in a reward of up to \$15,000 for information directly leading to an arrest, a criminal conviction, a civil penalty assessment, or forfeiture of property on the subject or subjects responsible for the suspected unlawful take of these red wolves. The red wolf is protected under the Endangered Species Act. The maximum criminal penalties for the unlawful taking of a red wolf are one year imprisonment and \$100,000 fine per individual. Anyone with information on the deaths of red wolves is urged to contact Special Agent Sandra Allred at (919) 856-4786 or North Carolina Wildlife Resources Commission Officer Robert Wayne at (252) 216-8225.