

Red Wolf Recovery Program



*Captive wolf on top of den at the new exhibit enclosure in Columbia, NC
Photo credit: Kim Wheeler/RWC*

1st Quarter Report FY13

October - December 2012

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www.fws.gov/redwolf



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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.

Northeastern North Carolina Restored Population

We estimate between 100 and 120 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 sterile coyote pair). A pack is defined as at least two known canids cooperatively inhabiting an established territory.

Population and Territory Status

A total of 65 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 2013 (FY13). The population includes 13 wolf packs (comprised of 42 wolves and 11 breeding pairs), and nine mixed packs (comprised of nine wolves and nine sterile coyotes). An additional 14 wolves are not known to be associated with a pack.

A total of 50 sterile coyotes were monitored in the Red Wolf Recovery Area at the end of this quarter.

Wolf Pairings

Two breeding pairs of red wolves were lost during the quarter. One pair lost the breeding male from gunshot, and the other pair lost the breeding female from unknown causes. In both cases, the lost wolves were part of a pair that whelped pups in 2012.

Wolf Captures and Radio-Telemetry Marking

Four red wolves were captured during the quarter, all of which were first-time captures. All wolves captured were fitted with a radio-telemetry collar (VHF or GPS) or surgically implanted with abdominal transmitters, and released. Captured red wolves consisted of two males and two females, and all were pups (<1 year of age).

Dispersals

One yearling female wolf dispersed from her natal pack territory, and one adult male wolf dispersed from his natal territory during the quarter. A young adult male returned to his natal pack territory during the quarter after having previously dispersed.

Mortalities

Thirteen wolves (6 males, 7 females) from the Red Wolf Recovery Area are known to have died during the quarter. Mortalities consisted of eight adult wolves (>2 years of age), four juveniles (1-2 years of age), and one pup (<1 year of age). Eight of the deaths appeared to be the result of gunshot and are currently under investigation by the U.S. Fish and Wildlife Service's Office of Law Enforcement; one death appeared to be the result of vehicle collision; and, four deaths were of unknown cause.

No sterile, radio-collared coyotes were known to have died during the quarter.

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

Disappearances

The Red Wolf Recovery Program lost radio contact with one adult male wolf 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.

Species Survival Plan (SSP) Managed Population

Red Wolf Species Survival Plan (SSP) cooperating facilities are coordinated and managed by the SSP Coordinator and based at Point Defiance Zoo & Aquarium (PDZA) in Tacoma, Washington. The following information is based on activities completed or conducted by the SSP Coordinator during the quarter reported.

SSP Population Status

The SSP coordinates 43 captive facilities (e.g., approved zoos and nature centers) throughout the United States, housing 192 wolves, ranging from pups to geriatrics, at the end of the first quarter.

Breeding / Transfer Recommendations

The SSP Coordinator reported that all breeding and transfer recommendations for the 2012/13 breeding season were finalized, and that all transfers have been completed during the quarter. A total of 17 wolves (10 males, 7 females) were transferred to 12 different SSP facilities.

Mortalities

One adult male wolf housed at the Wolf Conservation Center (WCC; South Salem, NY) was reported to have died associated with events following Hurricane Sandy.

SSP Facilities Updates

The WCC (South Salem, NY) collaborated with National Geographic by deploying a “crittercam” on one of the facility’s female red wolves. The collar was dropped remotely from the wolf after four days and was retrieved. For more information on the project, please go to www.nywolf.org.

The Western North Carolina Nature Center (Asheville, NC) received a \$50,000 grant from the Community Foundation of Western North Carolina. A portion of the grant will fund interpretive enhancements to the Nature Center’s red wolf exhibit.

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.

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: Prevalence of cystic endometrial hyperplasia and its effect on reproduction in the red wolf (*Canis rufus*).

Graduate Student: n/a

Committee Chair/Principal Investigator: Kadie Anderson, DVM, and Karen Wolf, DVM, Dipl. ACZM, Point Defiance Zoo & Aquarium (PDZA)

Project Title: Inbreeding avoidance in 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/images/20121030_Bibliography.pdf.

Bohling, J.H., J.R. Adams, and L.P. Waits. 2012. Evaluating the ability of Bayesian clustering methods to detect hybridization and introgression using an empirical red wolf data set. *Molecular Ecology*. [Available as Early Online Edition at <http://onlinelibrary.wiley.com/doi/10.1111/mec.12109/full>].

Chambers, S.M., S.R. Fain, B. Fazio, and M. Amaral. 2012. An account of the taxonomy of North American wolves from morphological and genetic analyses. *North American Fauna* 77:1. [Available as Online Edition at <http://www.fwspubs.org/doi/pdf/10.3996/nafa.77.0001>].

Cheatum, M., and C. Ogg. 2012. The application of ecosystem services markets to the conservation of red wolf habitat in North Carolina: a local effort with national implications. *Conservation White*

Paper. Conservation Economics and Finance Program. Washington, DC: Defenders of Wildlife. 61pp.

Souther, O., and S. Wiggers. 2012. Comparative diet analysis of *Canis rufus* and *Canis latrans*. Proceedings of the National Conference of Undergraduate Research 2012. [Available as abstract at <http://www.ncurproceedings.org/ojs/index.php/NCUR2012/article/view/142>]

Presentations

No presentations by collaborators were reported during this quarter.

Staff and Volunteers

The Red Wolf Recovery Program employs eight full-time staff, including the program coordinator, assistant coordinator, field coordinator, three wildlife biologists, a biological technician, and an administrative assistant. The Red Wolf Recovery Program also benefits from unpaid interns (Caretakers).

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. Requests for discovery boxes should be made to 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 Pocosin Lakes National Wildlife Refuge (PLNWR) educators and volunteers.

Presentations

Date	Location	Audience	Length	Attendance	Presenter
October 24	Manteo, NC	Wildfest	8 hrs	~500	A. Knight
December 3	Manteo, NC	Manteo Middle School Nature Club	1 hr	27	C. Heffley
December 11	Kill Devil Hills, NC	First Flight Middle School Nature Club	1 hr	21	C. Heffley

Howlings

Date	Location	Event	Length	Attendance	Presenter
October 13	ARNWR	Fall Howling	2 hrs	47	C. Heffley A. Knight
November 7	ARNWR	Wings Over Water Howling	2 hrs	14	A. Knight DJ Sharp

November 9	ARNWR	Wings Over Water Howling	2 hrs	20	A. Knight DJ Sharp
December 8	ARNWR	Winter Howling	2 hrs	39	C. Cook DJ Sharp

Website / Social Media

The Red Wolf Recovery Program recently launched Facebook and Flickr internet pages. Our Facebook page connects our program with “friends” from around the world and informs them of the conservation efforts of the Red Wolf Recovery Program. The Facebook page can be found at www.facebook.com/redwolfrecoveryprogram. Our Flickr page provides a site for users to view and download high resolution pictures related to red wolves and the Red Wolf Recovery Program. Our Flickr page can be found at www.flickr.com/photos/trackthepack.

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.

Media Inquires

The Red Wolf Recovery Program responded to numerous media inquiries during this quarter, including the British Broadcasting Corporation (BBC); science writer DeLene Beeland (www.delene.us), who is putting the finishing touches on a book about red wolves to be published Spring 2013; Natural History Magazine (article entitled “Red wolf’s last stand,” by C.L. Dybas, in the October 2012 online edition, available at www.naturalhistorymag.com/features/282268/red-wolfs-last-stand); Texas Parks and Wildlife Magazine (article entitled “Last stand of the red wolf,” by R. Roe, in the December 2012 issue, available online at www.tpwmagazine.com/archive/2012/dec/LLL_redwolf/); North Carolina Coastal Federation’s Coastal Review Online (article entitled “Red wolf programs ends its 25th year,” by C. Kozak, in the December 2012 online edition, available online at www.nccoast.org/Article.aspx?k=ee8fba3d-ca49-4612-b103-572c1e1d8b2e); and, Public Radio East’s The Down East Journal (broadcast online at [www.publicbroadcasting.net/pre/news.newsmain/article/845/0/1949506/The.Down.East.Journal/The.Dow.n.East.Journal.\(1116-1712\)](http://www.publicbroadcasting.net/pre/news.newsmain/article/845/0/1949506/The.Down.East.Journal/The.Dow.n.East.Journal.(1116-1712))).

Partnerships

Red Wolf Coalition

The Red Wolf Coalition (RWC), a not-for-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) 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 reported that construction of the red wolf viewing facility and perimeter fencing at PLNWR (Columbia, NC) has been completed, including the addition of a culvert and other materials to construct an artificial den. The viewing area now has bleachers, as well. The RWC obtained the necessary funds for the red wolf viewing facility from the U.S. Department of Agriculture’s Rural Development and from a generous gift from the North Carolina Zoological Society. The ribbon cutting ceremony for the opening of the live red wolf exhibit at PLNWR took place on October 26, 2012. The Coalition was honored to have

the USFWS Red Wolf Recovery Program staff, PLNWR staff, the Red Wolf SSP Coordinator, the RWC board of directors, friends and supporters, and Congressman Walter B. Jones Jr. at the ceremony. The event was an opportunity to showcase our ambassador red wolves and talk about the importance of this type of facility. The RWC would like to thank everyone that made this project a reality.

The RWC's Executive Director was invited to speak to the Akron Zoological Conservation Fund's board of directors regarding the RWC's 2013 grant request. The 2013 grant requested radio-telemetry collars for the restored red wolf population and a transportation crate to be used by the SSP facilities. The grant request was approved by their board, and funds will be distributed in June 2013. The Akron Zoological Conservation Fund also awarded the RWC a grant for \$4,000 in 2012 that was used to fund the Wolves & Wildlands in the 21st Century exhibit, and items for the educational space at the live red wolf exhibit at PLNWR. The RWC would like to thank the Akron Zoo for their continued support.

The RWC Executive Director reported conducting several education programs during the quarter, including a red wolf presentation via Skype to a group of 3rd graders from Windsor Woods Elementary School (Virginia Beach, VA), and hosting staff and visitors from the North Carolina State Museum of Natural Science (Raleigh, NC) and conservation biology graduate students from Duke University (Durham, NC) to tour the new live wolf exhibit at PLNWR.

The RWC also has three Red Wolf Discovery Boxes for all grade levels available for educational use. 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 for more information or to reserve your Red Wolf Discovery Box.

Announcements

The U. S. Fish and Wildlife Service is requesting assistance with multiple investigations involving the suspected illegal take of radio-collared red wolves. Anyone who has essential information that directly leads 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 may be eligible for a reward of up to \$8,000*. 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 death of this red wolf or any others, past or future, is urged to contact Special Agent Sandra Allred at (919) 856-4786, Refuge Officer Frank Simms at (252) 216-7504, or North Carolina Wildlife Resources Commission Officer Robert Wayne at (252) 216-8225.

*[Please note: In addition to the \$2,500 reward offered by the U.S. Fish and Wildlife Service for each individual red wolf, the Red Wolf Coalition and the North Carolina Wildlife Federation have contributed an additional \$500 and \$5,000, respectively, to the U.S. Fish and Wildlife Service's total reward amount.]