

Red Wolf Recovery Program



Red wolf pups, Red Wolf Recovery Area; Photo credit: A. Beyer/USFWS

3rd Quarter Report

April – June 2013

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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 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 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 69 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 third quarter of our fiscal year 2013. The population includes 14 wolf packs (comprised of 45 wolves and 11 breeding pairs), and nine mixed packs (comprised of nine wolves and nine coyotes). An additional 15 wolves are not known to be associated with a pack.

The Red Wolf Recovery Program documented seven red wolf litters (comprised of 34 pups) born in the Red Wolf Recovery Area during the 2013 whelping season. Additional pups and/or litters could be present, but have not been confirmed. One additional pup born in captivity at Alligator River National Wildlife Refuge was fostered into a wild litter. Pups born during the 2013 whelping season are not included in the reported population numbers.

A total of 63 sterile coyotes were monitored in the Red Wolf Recovery Area at the end of this quarter.

Wolf Pairings

One breeding pair of red wolves was lost during the quarter when the resident breeding male was lost to contact.

One mixed (wolf-coyote) pair was lost during the quarter when the resident sterile female coyote was lost to contact.

Wolf Captures and Radio-Telemetry Marking

Three red wolves were captured during the quarter, none of which were first-time captures. One of these wolves was subsequently released after being vaccinated and fitted with a radio-collar, while the other two wolves are currently being held in captivity. Captured red wolves consisted of one adult male and two adult females.

Five coyotes were captured, sterilized, radio-collared, and released during the quarter. The captured coyotes consisted of one male and four females.

Dispersals

No known red wolves dispersed from their natal territories during the quarter.

No known red wolves or coyotes were displaced from their territories during the quarter.

Mortalities

No known red wolves from the Red Wolf Recovery Area are known to have died during the quarter.

Five sterile, radio-collared coyotes (1 male, 4 females) were known to have died during the quarter. Three of the deaths were the result of vehicle collision, one the result of gunshot, and one the cause of death could not be determined.

Disappearances

The Red Wolf Recovery Program lost radio contact with one adult male red wolf and thirteen coyotes (2 males, 11 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.

Species Survival Plan (SSP) Managed Population

Red Wolf Species Survival Plan (RWSSP) 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 198 wolves, ranging from pups to geriatrics, at the end of the third quarter.

Four litters resulting in 23 pups were born at three SSP facilities this season (one litter at Sandy Ridge at ARNWR; one litter at Jackson Zoo, and two litters at PDZA's off-site facility). A single female pup from the Sandy Ridge litter was fostered to a wild-born litter.

Breeding / Transfer Recommendations

The SSP Coordinator reported that a total of nine wolves were transferred to four different SSP facilities during the third quarter.

Mortalities

Twelve wolf mortalities (3 adults, 9 pups) were reported at SSP sites. Neonate mortalities were associated with viral and bacterial infections. One adult male wolf housed at the Wildlife Science Center (WSC; Forest Lake, MN) and two adult female wolves at PDZA's off-site facility were reported to have died during the third quarter.

SSP Facilities Updates

The 2012 International Red Wolf Studbook was completed and distributed to designated individuals and organizations as required by WAZA International Studbook distribution list and posted on the AZA Website.

The Red Wolf Recovery Program received nearly \$2300 from the Trevor Zoo (Millbrook, NY) through Trevor Zoo's involvement with the Keep Safe Project fundraising event. Information about the Keep Safe

Project and the fundraising event can be found at: www.keepsafeproject.com. The funds will be used to purchase new field equipment to support management efforts of the NENC wild red wolf population. We sincerely thank Trevor Zoo for including the Red Wolf Recovery Program in their Keep Safe Project fundraising event.

The Red Wolf Recovery Program was one of six organizations that benefitted from fundraising efforts through the Quarters for Conservation Program at Knoxville Zoo (Knoxville, TN) in June. For more information on the Knoxville Zoo and their Quarters for Conservation Program, please visit www.knoxville-zoo.org. Total proceeds from the Quarters for Conservation Program will be reported next quarter.

Other Activities

We would like to extend our gratitude to Mark MacAllister and Craig Standridge for their efforts in improving the RWSSP website. Check out the new website at: <http://redwolfssp.org>.

Three red wolf proposals were submitted to PDZA's Conservation Committee (ConCom) and were awarded funding. Many thanks to ConCom for supporting these projects:

1. Inflammatory bowel disease in the red wolf (*Canis rufus*): prevalence, clinicopathological and demographic characteristics. Award amount = \$8125. Project Investigators: K. Wolf, K. Anderson, M. Garner, W. Waddell
2. Initial development of a canid disease monitoring and prevention program for the conservation of endangered red wolves (*Canis rufus*). Award amount = \$2500. Project Investigators: B. Bartel, K. Wolf, D. Rabon, W. Waddell
3. Population viability analysis and preliminary demographic models of endangered red wolves (*Canis rufus*). Award Amount = \$6200. Project Investigators: B. Bartel, D. Rabon, L. Faust, S. Long, W. Waddell

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/RWBibliography.pdf>.

Beeland, T.D. 2013. The Secret World of Red Wolves: The fight to save North America's other wolf. University of North Carolina Press.

Desmul, L. 2013. Habitat connectivity and suitability for *Canis rufus* recovery. Master's Thesis. Duke University.

Hutt, N. 2013. A Closer Look at Red Wolf Recovery: A conversation with Dr. David R. Rabon. International Wolf Magazine, a publication of The International Wolf Center - Summer 2013.

Standridge, C., and B. Graham. 2013. Return of the Red Wolf, printed by the Point Defiance Zoological Society.

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
April 11	Newport News, VA	Christopher Newport University	1 hr	~40	B. Bartel
April 27	ARNWR	Howling Safari	2 hrs	35	L. Baxter
May 25	ARNWR	Howling Safari	2 hrs	45	L. Baxter
May 29	Davidson, NC	Sustainability Scholars, Davidson College	1 hr	14	D. Rabon
June 5	ARNWR	Howling Safari	2 hrs	22	L. Baxter
June 12	ARNWR	Howling Safari	2 hrs	28	L. Baxter
June 17	Manteo, NC	Cub Scouts Day Camp	1 hr	40	L. Baxter
June 19	ARNWR	Howling Safari	2 hrs	37	L. Baxter
June 26	ARNWR	Howling Safari	2 hrs	32	L. Baxter

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 Downeast Journal of Public Radio East.

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 held an open house at the Red Wolf Education Center (Columbia, NC) in conjunction with PLNWR on April 13. Attendees were able to see the ambassador red wolves that live on site, learn about red wolf conservation and the importance of refuge properties, make their own red wolf bracelet or necklace, and try their hand at archery. The RWC Executive Director reported about 100 people in attendance at this event.

The RWC Executive Director reported conducting several education programs during the quarter, including presentations to students and faculty from East Carolina University (Greenville, NC), to visitors from Davidson College (Davidson, NC), to a visiting birding group from Raleigh (Raleigh, NC), and to a local daycare facility (Columbia, NC). The RWC also participated in a science camp at with PLNWR on June 18.

The RWC is offering multiple summer educational programs and activities at the Red Wolf Education and Healthcare Facility (Columbia, NC), including Talk Like a Red Wolf, Red Wolf 101, and Red Wolf. These programs provide families and small groups an introduction to red wolves, their lives and their conservation. Reservations are required for those wishing to attend an event and can be scheduled online (<http://redwolves.com/program/>) or by phone (252-796-5600).

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. Red Wolf Discovery Boxes were sent to 3 different groups this quarter.

Friends of the Red Wolf

The Friends of the Red Wolf is a non-profit organization established to support the conservation and recovery of wild red wolves. They are a program of The WILD Foundation (www.wild.org) which shares its 501(c)3 non-profit status, and enables all donations to be tax-deductible as charitable contributions. The Friends of the Red Wolf is informed by sound scientific research and adaptive management practices, and directly collaborates with Wolf Recovery Program in helping achieve recovery goals for the red wolf. Their website (friendsofredwolves.org) provides information about the ecology of red wolves, as well as news and updates about red wolf restoration.

DeLene Beeland, founder of the Friends of the Red Wolf recently published a new book, [The Secret World of Red Wolves: The Fight to Save North America's Other Wolf](#), in which she shadowed the Red Wolf Recovery Program over the course of a year and crafted an intimate portrait of the red wolf, its natural history, and its restoration. She participated in multiple media events to promote the book's release, including interviews with Catfish Radio (www.ketr.org - Outdoors with Luke Clayton program), NC Sea Grant Coastwatch magazine, and WUNC Public Radio's The State of Things (<http://wunc.org/post/red-wolves-return-wild>). She also reports one fundraising event through [Friends of the Red Wolf Facebook page](#) that resulted in about \$500 of donations, which will be used to purchase new field equipment to support management efforts of the NENC wild red wolf population. Thank you DeLene and the Friends of the Red Wolf for your support!

Announcements

Kristin Brzeski (PhD student at Louisiana State University) recently received a Doctoral Dissertation Improvement Grant from the National Science Foundation to examine immunocompetence and disease resistance in the wild red wolf population. Congratulations Kristin!