

# Red Wolf Recovery Program



*Captive red wolf, Museum of Life and Science, Durham, NC.  
Photo credit: Becky Bartel/USFWS*

## 1<sup>st</sup> Quarter Report

**October – December 2013**

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Assistant Coordinator: Becky Bartel, PhD  
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Wildlife Biologists: Chris Lucash, Ford Mauney, Michael L. Morse  
Biological Technician: Ryan Nordsven  
Administrative Assistant: Vacant  
Intern(s) (Caretaker): Kate Hankins / DJ Sharp



[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.

## **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 62 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 2014. The population includes 11 wolf packs (comprised of 36 wolves and 9 breeding pairs), and 8 mixed packs (comprised of 8 wolves and 8 sterile coyotes). An additional 18 wolves are not known to be associated with a pack.

A total of 61 sterile coyotes were monitored in the Red Wolf Recovery Area at the end of this quarter.

### **Pairings**

Three breeding pairs of red wolves were lost during the quarter. One breeding pair was lost when the breeding male was killed by gunshot. Another breeding pair was lost when the breeding female was killed by gunshot. We lost radio contact with the breeding female from the third breeding pair. One breeding pair of red wolves formed during the quarter, resulting in a net loss of two breeding pairs.

Three mixed pairs (wolf-coyote) disbanded during the quarter. Two of the three mixed pairs ended with the death (by gunshot) of the wolf. One coyote also was killed by gunshot in one of the mixed pairs. The third mixed pair disbanded with the coyote being displaced by a new red wolf. One new mixed pair also was formed during the quarter.

### **Captures and Radio-Telemetry Marking**

Seven red wolves were captured during the quarter, three of which were first-time captures. All first-time captures were fitted with radio-telemetry collars (VHF or GPS) or surgically implanted with abdominal radio transmitters, and six of the wolves were released. The remaining wolf is a breeding age male that was held in an acclimation pen within a female red wolf's territory in an attempt to create a new breeding pair. Captured red wolves consisted of two males and five females; four were adults (>2 years of age) and three were pups (<1 year of age).

Six coyotes (1 male, 5 females) were captured and released during the quarter, five of which were first-time captures. All captured coyotes were sterilized before being radio-collared and released.

### **Dispersals**

Two known young male red wolves dispersed from their natal territories during the quarter.

One sterile, radio-collared male coyote was known to have been displaced by a male red wolf during the quarter.

## **Displacements**

One young male red wolf was displaced from his natal territory with the arrival of a new breeding male.

## **Mortalities**

Six adult red wolves (4 males, 2 females) from the Red Wolf Recovery Area are known to have died during the quarter. All of the mortalities were the result of gunshot with the exception of one that is suspected foul play, and all are currently under investigation by the U.S. Fish and Wildlife Service's Office of Law Enforcement.

Five sterile, radio-collared coyotes (3 males, 2 females) were known to have died during the quarter. Two were due to gunshot, two to vehicle collision, and one cause of death remains unknown. Two of these coyotes had previously left the recovery area and been lost to contact, so they were not represented in last quarter's population numbers.

The first quarter corresponds with the rifle hunting season in eastern North Carolina. Red wolf mortalities have historically been significantly higher during this quarter compared to the rest of the year.

## **Disappearances**

The Red Wolf Recovery Program lost radio contact with one adult female wolf during the quarter.

Radio contact was also lost with four sterile, radio-collared coyotes 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 RWSSP Coordinator, Will Waddell, and based at Point Defiance Zoo & Aquarium (PDZA) in Tacoma, Washington. The RWSSP is guided by a steering committee currently comprised of representation from the North Carolina Museum of Life and Science (Durham, NC), Chattanooga Arboretum and Nature Center (Chattanooga, TN), North Carolina Zoo (Asheboro, NC), Wolf Conservation Center (South Salem, NY), Miller Park Zoo (Bloomington, IL), and Western North Carolina Nature Center (Asheville, NC). The RWSSP also benefits from a volunteer advisory board in the fields of veterinary medicine (Dr. Karen Wolf, PDZA), reproduction (Dr. Karen Goodrowe Beck, PDZA), education (Craig Standridge, PDZA), population biology (Sarah Long, Lincoln Park Zoo), *in situ* population management (Dr. David Rabon, USFWS), and pathology (currently vacant). The following information is based on activities completed or conducted by the RWSSP Coordinator during the quarter reported.

## **RWSSP Population Status**

The RWSSP coordinates 43 captive facilities (e.g., approved zoos and nature centers) throughout the United States, housing 193 wolves ranging from pups to geriatrics, at the end of this quarter.

## **Breeding / Transfer Recommendations**

The RWSSP Coordinator reported that a total of 11 wolves were transferred to nine different SSP facilities and the island propagation site at St. Vincent National Wildlife Refuge during the quarter.

## **Mortalities**

An adult female wolf housed at Northwest Trek (Eatonville, WA) was euthanized during the first quarter as a result of issues related to renal disease.

## **SSP Facilities Updates**

No new cooperators joined the RWSSP program in the first quarter. Binghamton Zoo (Ross Park, NY) is making arrangements to receive wolves later this winter.

Wolf Haven International (Tenino, WA) coordinated a visit by Dr. Bruce Christensen from the University of California-Davis to conduct uterine biopsy sampling on two female red wolves housed at Wolf Haven International. This effort will assist in the early detection of potential reproductive diseases.

The Red Wolf Recovery Program received \$300 from the Wolf Conservation Center (South Salem, NY) to equip the recently transferred breeding male wolf on St. Vincent Wildlife Refuge with its first radio-collar. We sincerely thank Wolf Conservation Center for this generous donation.

## **Other Activities**

The RWSSP Coordinator completed and distributed the final breeding and transfer plan from the RWSSP planning meeting at Homosassa Springs State Wildlife Park (Homosassa, FL).

In October, Red Wolf Recovery Program staff, the RWSSP Coordinator, and researchers from multiple universities (Clemson University, Ohio State University, North Carolina State University, University of Idaho), federal (U.S. Geological Survey) and state agencies (NC Wildlife Resources Commission), and other non-governmental partners (Wildlands Network) met at the Museum of Life and Science (Durham, NC) to discuss ongoing issues and research priorities in red wolf conservation. We also received a tour of the RWSSP facility. We thank Animal Department Director, Sherry Samuels, and museum staff for coordination of the tour and their hospitality during our meeting. We also thank the Red Wolf Coalition for providing snacks and beverages for meeting attendants.

In November, the Red Wolf Recovery Program Assistant Coordinator traveled to PDZA (Tacoma, WA) to assist with veterinary exams of captive red wolves. A group comprised of staff from PDZA, Northwest Trek (Eatonville, WA), and Wolf Haven International (Tenino, WA) captured animals, administered health exams and vaccines, and collected blood samples. The Assistant Coordinator also met with zoo staff and presented a seminar on the red wolf recovery program.

During this quarter, project progress reports were submitted to PDZA's Conservation Committee for funding awarded in FY2013. Research currently is ongoing for three different projects: 1) investigating inflammatory bowel disease in red wolves (PDZA), 2) development of a canid disease monitoring and prevention program (USFWS, PDZA), and 3) population viability analysis and preliminary demographic models of red wolves (USFWS, PDZA, Lincoln Park Zoo [Chicago, IL]).

## **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.

In December, the male red wolf from St. Vincent National Wildlife Refuge was captured and transferred to another RWSSP site in order to create a new breeding pair on the island. The wolf pair housed on the island was together for four years and did not produce any detected pups. LightHawk, a not-for-profit organization that provides aircraft flights as a tool to assist conservation projects throughout North America, generously donated a pilot and aircraft to transport the wolves. LightHawk pilots transported a male red wolf from Wolf Conservation Center (WCC; South Salem, NY) to St. Vincent National Wildlife Refuge, and then transported the male wolf from St. Vincent National Wildlife Refuge back to the WCC. We graciously thank LightHawk for their services. Many thanks also to Rebecca Bose at the WCC for her help with coordinating the transport, and to the staff at the Tallahassee Museum of Natural History (Tallahassee, FL) for being available for additional assistance.

## 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

\*Kristin recently received a Doctoral Dissertation Improvement Grant from the National Science Foundation to examine immunocompetence and disease resistance in the wild red wolf population.

*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>.

Anderson, K., and K. N. Wolf. 2013. Medical management of pyometra in three red wolves (*Canis rufus*). *Journal of Zoo and Wildlife Medicine* 44:1010-1017.

Bartel, R. A., and D. R. Rabon, Jr. 2013. Re-introduction and recovery of the red wolf in the southeastern USA. Pgs 107-115 in P. S. Soorae (ed.), *Global re-introduction perspectives: additional case studies from around the globe*. IUCN/SSC Re-introduction Specialist Group, Abu Dhabi, UAE.

McVey, J. M., D. T. Cobb, R. A. Powell, M. K. Stoskopf, J. H. Bohling, L. P. Waits, and C. E. Moorman. 2013. Diets of sympatric red wolves and coyotes in northeastern North Carolina. *Journal of Mammalogy* 94:1141–1148.

## Presentations

Dellinger, J. 2013. Habitat use of a large carnivore, the red wolf, in a human-altered landscape. 2013 International Wolf Symposium: Wolves and Humans at the Crossroads, October 10-13, Duluth, Minnesota.

Wheeler, K. 2013. The challenge of connecting local people to red wolf restoration. 2013 International Wolf Symposium: Wolves and Humans at the Crossroads, October 10-13, Duluth, Minnesota.

## 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](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 Pocosin Lakes National Wildlife Refuge (PLNWR) educators and volunteers.

## Presentations

<u>Date</u>	<u>Location</u>	<u>Audience</u>	<u>Length</u>	<u>Attendance</u>	<u>Presenter</u>
October 23	ARNWR, NC	Howling Safari/ Wings Over Water	2 hrs	6	K. Hankins

October 25	ARNWR, NC	Howling Safari/ Wings Over Water	2 hrs	15	K. Hankins
November 6	Tacoma, WA	PDZA	1 hr	50	B. Bartel
November 15	Columbia, NC	NCSU	3 hrs	20	B. Bartel
November 16	ARNWR, NC	Howling Safari	2 hrs	45	K. Hankins
November 19	Waxhaw, NC	Rea View Elementary	4 hrs	600+	D. Rabon/ D. Beeland
December 2	Manteo, NC	Manteo Elementary First Flight Elementary	2 hrs	54	C. Heffley
December 7	ARNWR, NC	Howling Safari	2 hrs	10	K. Hankins

## Website / Social Media

The Red Wolf Recovery Program has launched several social media sites. Our Facebook page connects the Red Wolf Recovery Program with “friends” from around the world and informs them of our conservation efforts. The Facebook page can be found at [www.facebook.com/redwolfrecoveryprogram](http://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](http://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](http://trackthepack.blogspot.com).

## Media Inquires

The Red Wolf Recovery Program responded to numerous media inquiries during this quarter, including the Washington Post (Washington, DC), Sun Journal (New Bern, NC), Virginia Pilot (Norfolk, VA), Charlotte Observer (Charlotte, NC), The Daily Reflector (Greenville, NC), NPR, All Things Considered, Public Radio East, Post and Courier (Charleston, SC), The Weather Channel, and freelance writers Moises Valesquez-Manoff and Cheryl Lyn Dybas.

## 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](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 Executive Director attended the International Wolf Symposium (Duluth, MN) in October and led two discussions on red wolf conservation. The RWC also was invited to speak at the NC National Wildlife Federation's board meeting, held in Pantego, NC. The RWC Executive Director reported it was a pleasure to speak with the group and took the opportunity to thank them directly for their contribution to the reward fund for the recent gunshot deaths of red wolves. The RWC Executive Director also participated in a radio interview on UNC Public Radio regarding red wolf conservation.

The RWC Executive Director reported conducting several education programs during the quarter, including presentations to a group from Wings Over Water that visited the Red Wolf Education & Healthcare Facility and had the opportunity to photograph the resident pair of red wolves. RWC also hosted six additional groups (147 people) from Raleigh, Nags Head, and Durham at the Red Wolf Education & Healthcare Facility. Reservations are required for those wishing to visit the center and can be scheduled online (<http://redwolves.com/program/>) or by phone (252-796-5600).

The RWC submitted a grant application to the Akron Zoo Conservation Fund for printing additional copies of the red wolf brochure. If awarded, these brochures will be distributed to RWSSP facilities.

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](mailto:kwheeler@redwolves.com) for more information or to reserve your Red Wolf Discovery Box. The RWC sent Discovery Boxes to six different schools in North Carolina, Virginia, and Washington this quarter.

## Friends of the Red Wolf

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

The founder of FORW reported several activities during the quarter, including two presentations to an undergraduate class at Duke University and to students in K-5 grades of Rea View Elementary (Waxhaw, NC). Students at Rea View Elementary also were able to interact and explore hands-on items from a Discovery Box.

In December, the News & Observer (Raleigh, NC) published a rebuttal written by FORW founder in response to an earlier published opinion editorial piece on red wolves and coyotes. The article can be found at <http://www.newsobserver.com/2013/12/05/3436039/t-delene-beeland-why-the-red-wolf.html>.

## Announcements

The U.S. Fish and Wildlife Service published several press releases requesting assistance with investigations on the recent suspected illegal take of a number of radio-collared red wolves. The press releases can be found at <http://www.fws.gov/southeast/news/>. Anyone with 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 a red wolf may be eligible for a reward. Pledged contributions from the North Carolina Wildlife Federation, Red Wolf Coalition, Humane Society of the United States, and the Center for Biological Diversity have increased the reward amount up to \$26,000. Anyone with information on the death of a red wolf is urged to contact Resident Agent in Charge John Eloffson at (404) 763-7959, Refuge Officer Frank Simms at (252) 216-7504, or North Carolina Wildlife Resources Commission Officer Robert Wayne at (252) 216-8225.