Red Wolf
Recovery Program

Photo credit: Greg Koch

2nd Quarter Report

January - March 2010

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www.fws.gov/redwolf

trackthepack.blogspot.com

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 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. However, interbreeding with the coyote (a species not native to North Carolina) has been recognized as a threat affecting the restoration of red wolves. 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 premature mortality, are of concern in the restoration of red wolves. Efforts to reduce the 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

For the purposes of this report, all population figures are comprised only of known canids (i.e., wolves, coyotes, and/or hybrids that are actively monitored through either a functioning radio-collar or surgically implanted abdominal radio transmitter). Additional wolves, coyotes, and/or hybrids may be present, but have not been captured or their presence otherwise confirmed.

Population and Territory Status

A total of 78 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 second quarter of our fiscal year 2010 (FY 10). The population includes 29 packs (totaling 67 wolves) with 14 breeding pairs. An additional 11 wolves are not known to be associated with a pack (as defined in the Pack Summaries section).

Wolf Pairings

Three new wolf pairs (Gator pack, Weyerhaeuser pack, Bishop pack) were formed and one wolf pair (L-Block pack) separated, giving the Recovery Program a net gain of two new breeding pairs during the quarter. The male and female wolves placed in a soft-release acclimation pen in December 2009 in an attempt to form a breeding pair (Little Alligator pack) were released in January 2010. The male wolf remained in the area following release, but the female returned to her natal territory. To date, no other female wolf has moved into the area.

Wolf Captures and Radio Telemetry Marking

During this quarter, Red Wolf Recovery Program staff logged approximately 4,498 trap-nights. For that effort, 37 wolves were captured, 13 of which were first time captures. All wolves were fitted or re-fitted with radio-collars (either VHF or GPS) and released, except for one adult female that is currently held in captivity for veterinary care. Captured wolves consisted of 22 males and 15 females; 13 adults (> 2 years of age), 10 yearlings (1-2 years of age), and 14 pups (< 1 year of age).

Dispersals

Nine known wolves (7 males, 2 females) dispersed from their natal territories, including one adult, seven yearlings, and one pup.

Mortalities

Two known wolves (1 adult male, 1 female pup) from the Red Wolf Recovery Area died during the quarter. The adult male wolf died from intra-specific aggression after being displaced from his territory and exhibiting wide-ranging movements. The female pup was killed by gunshot; the carcass was transferred to the National Wildlife Health Center (Madison, WI) for necropsy, and the incident was reported to the U.S. Fish and Wildlife Service's Office of Law Enforcement.

Disappearances

The Red Wolf Recovery Program lost radio contact with three wolves (3 males; 1 adult, 1 yearling, 1 pup) during the quarter. The adult male wolf (Shirley pack) disappeared after losing his mate (Fall 2009) to an unknown cause of death. The yearling male (Tyson pack) disappeared after dispersing from his natal territory. The male pup (Rich pack) disappeared after dispersing from his natal territory when a non-resident male wolf moved in.

Pack Summaries

For the purposes of this report, the criteria used to define a pack include a known wolf maintaining an established territory and is either associating with or has historically associated with another wild canid inhabiting the same territory. Packs identified in the following summaries include a minimum of one known wolf within the quarter being reported.

Milltail Pack (4 collared wolves)

The Milltail pack consists of the radio-collared adult breeding pair (1544M male, 1357F female), one radio-collared yearling born in 2008 (1660F), and one radio-collared pup born in 2009 (1743F). These four wolves, along with three 2008 yearlings (1661M, 1662F, 1663M) and one 2009 pup (1745M), were captured, fitted or re-fitted with radio collars, and released in January 2010. Since their capture, 1661M, 1662F, 1663M, and 1745M have dispersed and are no longer considered part of the pack.

Gator Pack (2 collared wolves)

The Gator pack consists of a radio-collared adult breeding pair (1661M, 1085F). The yearling male wolf dispersed from the Milltail pack in February, joining the adult female wolf that occupied this territory.

Lux Pack (1 collared wolf)

The Lux pack consists of one radio-collared adult female wolf (904F). She recently moved into the territory following the death of the resident female wolf (1541F) in December 2009. No male canid has been captured at Lux pack.

Hester Pack (1 collared wolf, 1 collared coyote)

The Hester pack consists of one radio-collared male wolf (1333M) and one radio-collared sterile female coyote.

Waupaupin Pack (2 collared wolves)

The Waupaupin pack consists of a radio-collared adult breeding pair (1657M, 1471F). Two pups from the Waupaupin pack (1754F, 1757M) born in 2009 to the previous breeding male (1313M) and breeding female (1471F) were captured in February after having dispersed. They were radio-collared and released.

Ventures Pack (6 collared wolves)

The Ventures pack consists of the radio-collared adult breeding pair (1185M, 1207F), two radio-collared yearlings (1705M and 1706F) born in 2008, and two radio-collared (1777M, 1778F) pups born in 2009. The pups were captured, collared, and released in January.

Carmur Pack (1 collared wolf)

The Carmur Pack (formerly known as Boundary pack) consists of one radio-collared male wolf (1313M). The male wolf moved into the area following the death and disappearance of the previous wolf pair last quarter.

Swindell Pack (4 collared wolves)

The Swindell pack consists of the radio-collared adult breeding pair (1540M, 1419F) and two radio-collared pups (1749M, 1750M) born in 2009. The breeding male and the two pups were captured, collared or re-collared, and released in January. A radio-collared yearling (1684M) dispersed from the pack in January, becoming the new breeding male of Weyerhaeuser pack.

Weyerhaeuser Pack (2 collared wolf)

The Weyerhaeuser pack consists of a radio-collared adult breeding pair (1684M, 1440F). The male wolf dispersed from the Swindell pack in January.

Cameron Pack (1 collared wolf, 1 collared coyote)

The Cameron pack consists of a radio-collared adult male wolf (1726M) and a sterile radio-collared female coyote. The male wolf was captured, re-fitted with a radio collar, and released in February. The female coyote also was captured, sterilized, collared, and released in February.

Whitetail Pack (5 collared wolves)

The Whitetail pack (formerly known as ICW pack) consists of the radio-collared breeding female (1298F), one radio-collared yearling (1708F) born in 2008, and three radio-collared pups (1779F, 1780M, 1781M) born in 2009. The yearling and pups were captured, fitted-or re-fitted with radio collars, and released in February. A breeding male wolf is likely present, but has not been captured to date.

Kilkenny Pack (4 collared wolves)

The Kilkenny pack consists of a radio-collared breeding pair (1547M, 1170F) and two radio-collared pups (1766M, 1768M) born in 2009. The breeding male and the two pups were captured, fitted or re-fitted with radio collars, and released in February.

Rich Pack (3 collared wolves)

The Rich pack consists of a radio-collared breeding pair (1703M, 1633F) and one radio-collared pup (1741F) born in 2009. A radio-collared pup (1774M) dispersed from the pack in January, but his signal was lost in February; his fate remains unknown.

Pocosin Lakes Pack (3 collared wolves)

The Pocosin Lakes pack consists of a radio-collared breeding pair (1301M, 1358F) and one radio-collared pup (1748M) born in 2009. The pup was captured, collared, and released in March.

Pungo Pack (1 collared wolf)

The Pungo pack consists of a radio-collared male wolf (1620M). He was captured, fitted with a new radio collar, and released in February. A female coyote was captured and removed in March.

Beech Ridge Pack (3 collared wolves)

The Beech Ridge pack consists of three radio-collared siblings; an adult female (1429F) and two yearlings (1693F, 1698M). All were captured, re-fitted with radio collars, and released in January.

Bishop Pack (2 collared wolves)

The Bishop pack consists of a radio-collared breeding pair (1621M, 1671F). This is a newly discovered breeding pair. The male was lost to contact after his radio collar malfunctioned. When captured, fitted with a new radio collar, and released in February, it was determined that he was paired with the female wolf (1671F).

Shirley Pack (0 collared canids)

Radio contact was lost with the adult male wolf (1504M) of Shirley pack in February. His fate is unknown.

Mannings Pack (1 collared wolf)

The Mannings pack consists of a radio-collared male (1469M). He was captured, fitted with a new collar, and released in February. A female coyote was captured and removed from the area in March.

L-Block Pack (1 collared wolf)

The L-Block pack consists of a radio-collared adult male wolf (1238M). The radio-collared female wolf (1539F) left the L-Block pack and was captured near PLNWR in February. She is currently being held in captivity for medical treatment. The male was captured, fitted with a new collar, and released in March.

F2 Pack (1 collared wolf, 1 collared coyote)

The F2 pack consists of a radio-collared female wolf (1577F) and a sterile radio-collared male coyote. The male coyote moved into the area during the quarter.

Scuppernong Pack (1 collared wolf, 1 collared coyote)

The Scuppernong pack consists of a radio-collared male wolf (1683M) and a sterile radio-collared female coyote.

Tyson Pack (5 collared wolves)

The Tyson pack consists of the radio-collared breeding pair (1519M, 1448F), one radio-collared yearling (1682M), and two radio-collared pups (1760M, 1761M). A yearling female (1678F) dispersed from the area in January and became the new breeding female at Buck Ridge pack. A yearling male (1681M) also dispersed from the pack in January, but radio contact has since been lost. A female pup (1758F) was killed by gunshot in February.

Northern Pack (2 collared wolves)

The Northern pack consists of a radio-collared breeding pair (1628M, 1470F).

Gumneck Pack (2 collared wolves)

The Gumneck pack consists of a radio-collared breeding pair (1516M, 1685F). The female wolf was captured, fitted with a new radio collar, and released in February.

Buck Ridge Pack (1 collared wolf, 1 collared coyote)

The Buck Ridge pack consists of a radio-collared female wolf (1678F) and a sterile radio-collared male coyote. The female wolf settled the Buck Ridge area after dispersing from Tyson pack in January. The male coyote was captured, sterilized, collared, and released in February.

Frying Pan Pack (3 collared wolves)

The Frying Pan pack consists of the radio-collared breeding male (1177M) and two radio-collared offspring (1686F, a yearling female, and 1772F, a female pup). A third offspring, a radio-collared male (1533M), dispersed from the pack in January. He was captured north of Pungo Lake, fitted with a new collar, and released in March. The female yearling (1686F) was captured and released in February.

Timberlake Pack (2 collared wolves)

The Timberlake pack consists of a radio-collared breeding pair (1452M, 1300F).

Columbia Pack (2 collared wolves, 1 collared coyote)

The Columbia pack consists of a radio-collared male (1458M), his radio-collared female offspring (1630F), and a sterile radio-collared female coyote. The yearling female (1630F) returned to the area after being released from a soft-release acclimation pen at Little Alligator pack in an attempt to pair her with a male wolf (1727M).

Little Alligator Pack (1 collared wolf)

The Little Alligator pack consists of radio-collared yearling male (1727M). A coyote has been spotted with the male, but attempts to capture the coyote have been unsuccessful.

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: Wild canid genetic sampling in Eastern North Carolina.
Graduate Student: Justin Bohling (PhD student)
Committee Chair/Principal Investigator: Lisette Waits, PhD, University of Idaho

Project Title: The effects of parenthood on red wolves (*Canis rufus*) in northeastern North Carolina.
Graduate Student: Justin Dellinger (MS student)
Committee Chair/Principal Investigator: Troy Best, PhD, Auburn 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, Louisiana State University

Project Title: An assessment of spatial and temporal activities of wild adult male red wolves using GPS telemetry.
Graduate Student: Melissa Karlin (PhD student)
Committee Chair/Principal Investigator: John Chadwick, PhD, University of North Carolina at Charlotte

Project Title: Seasonal Cycles in Red Wolf Home Range Characteristics: A GPS Collar and Multispectral Satellite Image Study.
Graduate Student: Melissa Karlin (PhD student)
Committee Chair/Principal Investigator: John Chadwick, PhD, University of North Carolina at Charlotte

Project Title: Assessment of spatial and temporal activities of red wolves using GPS and VHF telemetry data.
Graduate Student: Melissa Karlin (PhD student)
Committee Chair/Principal Investigator: John Chadwick, PhD, University of North Carolina at Charlotte

Project Title: Dietary overlap between red wolves (*Canis rufus*) and coyotes (*Canis latrans*) in Eastern North Carolina.
Graduate Student: Justin McVey (MS student)
Committee Chair/Principal Investigator: Chris Moorman, PhD, North Carolina State University

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)

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.

Grooms, S. 2010. Return to the wild: the cliffhanger story of the red wolf recovery. Wolf Print Magazine 39 (Spring):24.

Hinton, J.W., and M.J. Chamberlain. 2010. Space and habitat use by a red wolf pack and their pups during pup-rearing. Journal of Wildlife Management 74(1):55-58.

Mayer, K.O. 2010. Song of the wild: tracking the red wolf. DeSoto Magazine 6(10):36-41. [Available on-line at http://desoto.foliosnap.com]

Rabon, D.R., Jr., and W. Waddell. 2010. Effects of inbreeding on reproductive success, performance, litter size, and survival in captive red wolves (*Canis rufus*). Zoo Biology 29(1):36-49.

Presentations

The following presentations related to red wolves were given during this quarter.

Parker, W. 2010. The beginnings of the red wolf recovery project. Western North Carolina Nature Center. February 6, Asheville, NC.

Staff and Volunteers

The Red Wolf Recovery Program employs eight full-time staff, including the program coordinator, four wildlife biologists, a biological technician, an outreach coordinator, and an administrative assistant. The 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 upon request.

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
Feb 6	Hyde County	Hyde County Hunters (Youth Hunt Day)	4 hours	200+	C. Lucash F. Mauney M. Morse
March 5-7	Wake County	Dixie Deer Classic	3 days	24,000	M. Morse

Howlings

Date	Location	Event	Length	Attend	Presenter
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Website / Social Media

The Red Wolf Recovery Program recently launched a weblog to provide a fun and creative outlet that highlights the efforts of the Red Wolf Recovery Program staff in the conservation of the red wolf. The weblog will combine text, images, videos, and links to other media related to its topic. The content will include educational, informational, and general journal entries written by program staff, and will allow readers to leave comments in an interactive format. The weblog can be found at trackthepack.blogspot.com.

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 42 captive red wolf sites at zoos and nature centers housing about 173 wolves [the number of wolves held in captivity was incorrectly reported in the FY10 1st Quarter Report. The correct number should have been 176 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 or www.pdza.org.

The SSP Coordinator reported the completion and distribution of the 2009 Red Wolf International Studbook. The SSP Coordinator also noted that the new off-site facility located adjacent to Northwest Trek Wildlife Park is nearing completion, and anticipates having non-breeding red wolves moved to this site by the end of April 2010. Furthermore, an open house was held in March for the Clear Lake Homeowners Association (within howling distance of site) to tour the facility and to answer questions. About 20 individuals attended. Follow-up meetings are planned to keep residents informed. [The Northwest Trek facility will replace the existing Graham facility as the flagship captive-breeding facility at PDZA. The development of Northwest Trek was made possible, in part, with funds from the Omnibus Appropriations Act 2009 (Public Law 111-8 – March 11, 2009), and the efforts of Congressman Norm Dicks (WA) and Congressman Heath Shuler (NC). An additional $179,000 was awarded to the Western North Carolina Nature Center (Asheville, NC) to upgrade their red wolf breeding and holding facilities.]

The SSP Coordinator also reported that the North Carolina Museum of Life and Science in Durham, NC (NCMLS) provided the Red Wolf SSP with funds to accomplish two red wolf transfer recommendations. Based on last year's breeding and transfer recommendations, NCMLS was not scheduled to move any wolves, so they used their facility funds to assist other Red Wolf SSP partners. The Red Wolf SSP and the U.S. Fish and Wildlife Service extend their gratitude to NCMLS for their generous contribution to ensure these important transfers were achieved. In addition, two animal care staff from PDZA traveled to the red wolf recovery area in North Carolina to assist PhD student, Justin Bohling, University of Idaho, with scat collection for genetic sampling (see Research). Partial support for this research project, plus staff time and travel, was provided by PDZA Conservation Funds.

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) is a non-profit organization based in northeastern North Carolina that advocates for the long term survival of red wolf populations through education and outreach. The RWC's educational program teaches students about the history, biology, and status of the red wolf recovery program, and accompanies students to ARNWR and PLNWR to learn about the habitat of the red wolf. The RWC currently employees an Executive Director, and has a membership of approximately 400 individuals and organizations. The following information is based on activities completed or conducted by the Executive Director during the quarter reported. Additional information on the RWC can be found at www.redwolves.com.

The Executive Director of the RWC reported conducting five presentations to students from three state and two local-area schools, and responded to 16 requests for information on the red wolf. In addition, the RWC participated in an ecotourism workshop, hosted by East Carolina University and The Conservation Fund, on current ecotourism trends and opportunities.

Announcements

The Red Wolf Recovery Program recently lost a long-time friend and colleague. Curtis "Curt" J. Carley, the program's first Project Leader (now called Recovery Coordinator), passed away on April 6, 2010. Curt was hired to head the newly established program in Beaumont, Texas, in 1973, and continued to oversee the program after being transferred to the Regional Office in Albuquerque, NM. Curt retired after 31 years with the U.S. Fish and Wildlife Service in 1996. The Red Wolf Recovery Program extends their deepest sympathies to Sara (Curt's wife) and the Carley family. For additional information about Curt and his substantial contributions to the conservation of red wolves, please read his article entitled "The Red Wolf (*Canis rufus*) Recovery Program: Things they didn't tell me in school" (Carley, C. 2000. Reflections of a Naturalist: Papers honoring Professor Eugene D. Fleharty. Fort Hays Studies, Special Issue 1, pp. 125-141).