

Demographic and Genetic Status of a Reintroduced River Otter Population in North-central New Mexico: A Summary Report of Research Activity, early 2018

PI: John J. Cox, Ph.D., Assistant Professor of Wildlife Ecology and Conservation Biology, University of Kentucky, Department of Forestry and Natural Resources, Lexington, KY 40546-0073; Tel: (859) 229-7200, Fax: (859) 323-1031; Email: jjcox@uky.edu; composed this report in its entirety.

Graduate Student: Gabie Wolf, M.S. Student, University of Kentucky, Department of Forestry and Natural Resources.

Additional Collaborators: Virginia “Ginny” Seamster, Ph.D. BISON-M/Share with Wildlife Coordinator, Ecological and Environmental Planning Division, New Mexico Department of Game and Fish, 1 Wildlife Way, Santa Fe, NM 87507, Tel: 505-476-8111

Kirk Patten, Assistant Chief of Fisheries, NM Dept. of Game and Fish, 1 Wildlife Way, Santa Fe, NM 87507, 505-476-8054

Matthew Springer, University of Kentucky, Department of Forestry and Natural Resources, serves as academic graduate co-advisor for Ms. Wolf

Lisette Waits, Ph.D., and Jennifer Adams, University of Idaho, Laboratory for Ecological, Evolutionary and Conservation Genetics University of Idaho, Fish and Wildlife Sciences, 875 Perimeter Drive, MS1136, Moscow, ID 83844-1136

Project Summary: Our objective was to noninvasively survey the reintroduced North American river otter (*Lontra canadensis*) population in the Rio Grande basin of north-central New Mexico to: 1) produce spatially-explicit estimates of population density, abundance, and population growth rate, and estimate population genetics parameters critical to conservation and management, 2) investigate for the presence of founder and Allee effects that may have resulted from releasing the small founder group into a waterway devoid of conspecifics, and 3) investigate for genetic connectivity (i.e., gene flow) that may have been established between the reintroduced population and a naturally expanding population in the San Juan River basin of northeastern New Mexico. After encouragement from New Mexico Department of Game and Fish (NMDGF), and prospects of further funding emerged, a fourth objective after the proposal was initially funded became the opportunistic collection and analysis of whole scats to determine river otter diet.

Funding for this project became available for expenditures for this project in ~mid-January, 2018, and 2 field techs (Brian Long, Daniel Boyes) were hired soon afterwards. Initial fieldwork included procurement of needed supplies and equipment, ~ 2 weeks of identification and mapping of otter latrine sites in the upper Rio Grande watershed, determination of time

demands for visiting sites for the purposes of establishing a 7-10 sampling “circuit”, and obtaining needed permits for access.

Molecular analysis using scats relies on the shedding of epithelial cells from the intestinal tract of animals and analysis of scats that contain cells with DNA that has not degraded as a result of environmental factors (e.g., UV rays); therefore, the freshest possible scats should be sampled to maximize the opportunity of collecting stable genetic material. Consequently, our first scat sampling effort, which began 02 Feb 2018, entailed clearing away very old (> 3 weeks) scats at 20 different latrine sites (16 along portions of the upper Rio Grande – CO border to Dixon, 2 on the Red River, and 2 on the Rio Pueblo; Table 1), and collection of 2-3 week old whole scats for dietary analysis (n = 119). DNA samples were not collected this first round. Subsequently, we collected an additional 587 whole scats (n = 706 total including week 1) and 585 DNA samples during 7 additional rounds of latrine visits (sampling occasions #2-8) that ended 19 April 2018. Additional field assistance in the latter half of the project was provided by techs Chyna Dixon and Kris Malone.

It would have been ideal to have more sampling rounds and a more thorough survey of the Rio Grande and some tributaries, but the level of funding, lack of accessibility (legal restrictions or geographic terrain difficulty), and need to sample within a ~7-10 window to satisfy mark-recapture assumptions, limited our sampling capabilities. DNA samples have been shipped to the University of Idaho where molecular analysis will begin upon receipt of the newly anticipated fiscal year allotment from New Mexico Department of Game and Fish. In addition, scat samples are currently being analyzed for prey contents at the University of Kentucky.

All \$24,432 of the initial round of (fiscal year 2018) funds were spent except a remaining \$107 that was not recognized in time before the account closed. We (UK Dept of Forestry and Natural Resources) actually spent an additional ~\$2400 above our grant allocation on a vehicle rental to get one new replacement tech to New Mexico, plus our field vehicle’s reliability became questionable towards the end of the project. Unfortunately, it takes 4-6 weeks for Motorpool rental charges to be charged to grants, which makes accounting for them during the final weeks of a project at the end of fiscal years problematic. We anticipate receiving the remainder of the NMDGF funds in July that will largely cover molecular analysis costs, as well as an additional \$17,776 from NMDGF to support further field collection efforts to augment the diet study.

Notably, Ms. Gabie Wolf, the UK grad student focused on the diet study who will be leading further sample collection efforts in the remainder of the calendar year, received an internal university grant of \$5,000 in April 2018 to hire techs to analyze scats and assist with additional sample collection in NM. Gabie and her tech made a late June 2018 trip to New Mexico to become more familiar with the latrine sites and associated access issues, meet with collaborators, and renew a federal access permit.

Table 1: River otter latrine site locations in the upper Rio Grande watershed, New Mexico, 02 February – 19 April 2018.

Latrine Site	East UTM	North UTM
State Line	436203	4094500
Big Rock	436145	4093625
Ute Mtn/Sunshine	437353	4081805
Lee Trail	438087	4074960
Chiflo Trail	439265	4066858
Bear Crossing	438191	4064072
La Junta north	438183	4056745
La Junta south	437958	4055489
J. Dunn north	436804	4043899
Black Rock	435975	4042154
Taos Junction Bridge	434169	4021553
OV above gaging station	432353	4019880
OV 2nd latrine	431564	4019214
OV 3rd latrine	431374	4018863
OV Petaca	430963	4017968
Quartzite	427948	4013377
Rio Pueblo upper	438982	4025249
Rio Pueblo lower	438126	4024378
Red River upper	441263	4059737
Red River lower	440917	4059458