

Malheur National Wildlife Refuge Inventory and Monitoring Proposal: Columbia spotted frog inventory project

Project Description:

This project will: 1) perform a detailed inventory of Columbia spotted frog occurrence across Malheur NWR, and 2) conduct a three-year monitoring program* to identify changes in spotted frog distribution (current vs. historic), critical habitat for each life stage, and variation in frog phenology between habitat types. The results of this inventory will be used to: a) develop an accurate, efficient monitoring protocol for use by Refuge staff to track population status, and b) develop a detailed plan for management of spotted frogs across Malheur NWR.

*Three years of monitoring are necessary to account for between-year variation in phenology and habitat use.

Background and Justification:

Currently, there are four recognized populations of Columbia spotted frogs (Green et al. 1997, Bos and Sites 2001, Funk et al. 2008). Of these, the Great Basin Distinct Population Segment (DPS) is currently declining (Gomez 1994, Reaser 2000, Wentz *et al.* 2005), and is a candidate for listing under the Endangered Species Act (USFWS 2009). The spotted frogs inhabiting Malheur NWR comprise the northernmost populations within the range of the Great Basin DPS, and may themselves contain several unique lineages due to (geologically) recent isolation. Unfortunately, even though they occupy a National Wildlife Refuge, the actual distribution and status of these frogs is unknown (Rombough and Engler 2010). Furthermore, there is evidence that some populations in the vicinity of Malheur NWR have themselves undergone recent declines (Wentz *et al.* 2005, Pearl *et al.* 2010, C. Rombough, *unpubl. data*).

Columbia spotted frogs occupy a wide range of habitats, the physical characteristics of which can cause variation in many aspects of the frogs' life history (Engle 2001, Pilliod *et al.* 2002, Bull 2005). This has been documented for the Northern population, but not for Great Basin frogs. Failure to account for variation in life history between habitat types (and seasons) has hampered past efforts to accurately inventory Great Basin spotted frog populations, resulting in an inability to distinguish detection failures from actual declines (*see* Pearl *et al.* 2010 *for an example of this*). Because of this, the distribution and status of the spotted frog on Malheur NWR remains unknown, despite nearly two decades of sporadic surveys by multiple agencies (Rombough and Engler 2010).

Total requested funds: \$2,830 – Field equipment and supplies
\$18,000 – Field time (2011 through 2013), professional herpetologist
\$6,000 – Background research, inventory protocol development, monitoring and management plan development and testing, professional herpetologist

Total request: \$26,830

Current in-kind funding contribution

- USFWS Region Biologist, Vancouver, WA – \$3,000 Field work and training
- USFWS Malheur NWR, Princeton, OR - \$6,000 Staff time, equipment, vehicle, fuel and housing
- USFWS ES Office, La Grande, OR - \$3,000 Staff time, equipment and technical support

Partnerships and additional support:

- Oregon Department of Fish & Wildlife – \$2,000 Technical support and training
- BLM Wildlife Biologist Hines, OR - \$5,000 Field work and technical support
- Chris Rombough, Rombough Biological - \$9,600 Field work and background research + \$4,410 mileage and expenses = \$14,010

Total match: \$33,010

Refuge Contact: Tim Bodeen, Refuge Manager, Malheur NWR, 36391 Sodhouse Lane, Princeton, OR 97721, phone 541-493-4225, email: Tim_Bodeen@fws.gov

References

- Bos, D.H.; and J.W. Sites, Jr. 2001. Phylogeography and conservation genetics of the Columbia spotted frog (*Rana luteiventris*; Amphibia, Ranidae). *Molecular Ecology* 10:1499-1513.
- Bull, E.L., 2005. Ecology of the Columbia spotted frog in northeastern Oregon. Gen. Tech. Rep. PNW-GTR-640. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 46 pp.
- Engle, J.C. 2001. Population biology and natural history of Columbia spotted frogs () in the Owyhee uplands of southwest Idaho: Implications for monitoring and management. M.S. Thesis, Boise State University, Boise, Idaho. 66 pp.
- Funk, W.C.; C.A. Pearl; H.M. Draheim; M.J. Adams; T.D. Mullins, and S.M. Haig. 2008. Rangewide phylogenetic analysis of the spotted frog complex (*Rana luteiventris* and *Rana pretiosa*) in northwestern North America. *Molecular Phylogenetics and Evolution* 14:483-496.
- Gomez, D. 1994. Conservation assessment for the spotted frog (*Rana pretiosa*) in the Intermountain Region. 30 pp.
- Green, D.M.; H. Kaiser; T.F. Sharbel; J. Kearsley; and K.R. McAllister. 1997. Cryptic species of spotted frogs, *Rana pretiosa* complex, in western North America. *Copeia* 1997:1-8.
- Pearl, C.A.; S.K. Galvan; M.J. Adams; and B. McCreary. 2010. Columbia spotted frog (*Rana luteiventris*) in southeastern Oregon: A survey of historical localities, 2009. U.S. Geological Survey Open-File Report 2010-1235. 96 pp.
- Pilliod, D.S.; C.R. Peterson; and P.I. Ritson. 2002. Seasonal migration of Columbia spotted frogs (*Rana luteiventris*) among complementary resources in a high mountain basin. *Canadian Journal of Zoology* 80:1849-1862.
- Reaser, J.K. 2000. Demographic analyses of the Columbia spotted frog (*Rana luteiventris*): case study in spatiotemporal variation. *Canadian Journal of Zoology* 78:1158-1167.
- Rombough, C.; and J. Engler. 2010. Surveys for Columbia spotted frog (*Rana luteiventris*) at ARRA project sites, Malheur NWR. Report to the USFWS, Malheur NWR. 13 pp.
- Wente, W.H.; M.J. Adams; and C.A. Pearl. 2005. Evidence of decline for *Bufo boreas* and *Rana luteiventris* in and around the northern Great Basin, western USA. *Alytes* 22:95-108.