

# Megan J. Osborne, Ph. D.

Department of Biology and Museum of Southwestern Biology, 1 University of New Mexico, Albuquerque, New Mexico, United States.

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## EDUCATION

LA TROBE UNIVERSITY

MELBOURNE, AUSTRALIA

Doctor of Philosophy

Conferred 2002

- Thesis Title: Molecular Evolution of Possums.
- Supervisors: Dr. Leslie Christidis (Museum Victoria) and Dr. Neil Murray (La Trobe University).

LA TROBE UNIVERSITY

MELBOURNE, AUSTRALIA

Bachelor of Science with Honours (1st Class)

1995

- Thesis Title: Population Genetics of the Mountain Pygmy Possum (*Burramys parvus*).
- Supervisor: Dr. Neil Murray.
- Majors- Genetics and Zoology

## PROFESSIONAL EXPERIENCE

UNIVERSITY OF NEW MEXICO

DEPARTMENT OF BIOLOGY

and MUSEUM OF SOUTHWESTERN BIOLOGY

ALBUQUERQUE, UNITED STATES

**Research Assistant Professor**

**January 2006 – Present**

- Awarded over 1.8 million USD of research grants to conduct empirical genetic research on evolutionary processes, phylogenetics and population genetics of arid-land freshwater fishes from the families Cyprinidae, Catostomidae and Salmonidae utilizing nuclear and mitochondrial genes, microsatellites, genomic approaches, and meristic and geomorphometric measurements.
- Awarded seed grant to facilitate 454 sequencing and analysis of the transcriptomes of Chiricahua leopard frog experimentally infected with *Batrachochytrium dendrobatidis* (chytrid fungus) and control frogs to explore tissue specific genetic responses to infection.
- Lectured- Conservation genetics, a component of graduate core evolution class.
- Supervised and mentored graduate and undergraduate students.
- Managed a research laboratory including managing budgets, recruiting students and research assistants, providing appropriate safety and ethics training, ordering supplies.
- Supervised fieldwork for fishes including applying for, and maintaining scientific collecting and land access permits. Reported collecting activities to U.S. State and Federal Agencies. Collected tissue samples for DNA and RNA analysis and voucher specimens. Provided direction to the collection manager and curatorial assistants (at the Museum of Southwestern Biology) to facilitate accession and cataloguing of samples, field notes, and habitat photographs to the permanent collection.

UNIVERSITY OF NEW MEXICO

DEPARTMENT OF BIOLOGY

And MUSEUM OF SOUTHWESTERN BIOLOGY

ALBUQUERQUE, UNITED STATES

## Post-doctoral Research Fellow

September 2002 - December 2005

- Led research projects examining the role of river fragmentation and pelagic early life-history (causing high variance in reproductive success) in driving the trajectory of genetic diversity metrics including genetic effective size in Rio Grande silvery minnow.
- Managed a molecular laboratory and research grants including preparation of annual reports to granting agencies.
- Organised and conducted field work for collection of fishes (using seines, minnow traps, backpack electrofisher) for genetic analysis, provided direction to the collections manager and curatorial assistants of the Museum of Southwestern Biology to archive field notes, voucher specimens, tissue and DNA samples.

MUSEUM VICTORIA  
**Research Assistant**

MELBOURNE, AUSTRALIA  
**1996 - 1999**

- DNA isolation from museum skins (feathers) and archived tissue samples (frozen and ethanol preserved).
- Molecular data collected using PCR and DNA sequencing to elucidate evolutionary relationships including among Australian and Papuan birds.
- Trained students and researchers in standard molecular techniques.

NSW NATIONAL PARKS SERVICE  
**Volunteer**

KOSCIUSZKO NATIONAL PARK, AUSTRALIA  
**1999-2001**

- Conducted small mammal trapping using Elliot traps for annual surveys for mountain pygmy possum. Collected hair samples for molecular analysis and collected field notes including notes of physical characteristics (i.e. sex, weight, maturity) and habitat descriptions.

## TEACHING ACTIVITIES

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- 2014 **Webinar Presentation** (invited): United States Fish and Wildlife Service, National Conservation Training Center, Advanced Conservation Genetics Webinar Series. *Native and Introduced Population as Genetics Reservoirs*. Delivered a nationally broadcast webinar to approximately 65 participants from US Federal and State Government agencies, universities, contractors.
- 2011 **Lecturer**: Graduate Evolution Core- Conservation Genetics Component (developed syllabus, designed and delivered lectures, led discussion sessions, developed and graded assignments and exams), University of New Mexico, Department of Biology.
- 2009 **Instructor**: Continuing Education- Genetics and Fish Management, Western Division American Fisheries Society Meeting, Albuquerque.
- 1999 **Teaching Assistant** (2nd Year Genetics), La Trobe University, Genetics Department. Taught laboratory practical sessions and graded assignments.
- 1998 **Teaching Assistant** (2nd Year Genetics), La Trobe University, Genetics Department.
- 1995 **Teaching Assistant** (1st Year Genetics), La Trobe University, Genetics Department.

## PEER-REVIEWED PUBLICATIONS

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1. **Osborne, M.J.**, Perkin, J.S., Gido K.B. and Turner, T.F. Comparative riverscape genetics reveals reservoirs of genetic diversity for conservation and restoration of Great Plains fishes. *Molecular Ecology*, Accepted.

2. Turner, T.F., **Osborne, M.J.**, McPhee, M.V. and C. Kruse. High and dry: isolated watersheds provide a test case for genetic response of fish to climate-change effects in high desert streams. *Conservation Genetics*, Available Online: <http://link.springer.com/article/10.1007/s10592-014-0666-0>
3. Perkin, J.S., Gido, K.B., Cooper, A.R., Turner, T.F., **Osborne, M.J.**, Johnson, E.R. and K.B. Mayes. Fragmentation and dewatering transform Great Plains stream fish communities. *Ecological Monographs*, Available Online: <http://www.esajournals.org/doi/pdf/10.1890/14-0121.1>
4. **Osborne, M.J.**, Perez, T., Altenbach, C.S. and T.F. Turner (2013) Genetic analysis of captive spawning strategies for the endangered Rio Grande silvery minnow. *Journal of Heredity* 104(3), 437-446.
5. **Osborne, M.J.**, Diver, T.A., and T.F. Turner (2013) Introduced populations as genetic reservoirs for imperiled species: a case study of the Arkansas River shiner (*Notropis girardi*). *Conservation Genetics*, 14(3), 637-647.
6. **Osborne, M.J.**, Sharp, A., Monzingo, J., Propst, D.L., and T.F. Turner (2012) Genetic analysis suggests high conservation value of peripheral populations of Chihuahua chub (*Gila nigrescens*). *Conservation Genetics*, 13(5), 1317-1328.
7. **Osborne, M.J.**, Carson, E.W., and T.F. Turner (2012) Genetic monitoring and complex population dynamics: insights from a 12-year study of the Rio Grande silvery minnow. *Evolutionary Applications*, 5(6), 553-574.
8. **Osborne, M.J.**, and T.F. Turner (2011) Isolation and characterization of major histocompatibility class II beta genes in an endangered North American cyprinid fish, the Rio Grande silvery minnow (*Hybognathus amarus*). *Fish and Shellfish Immunology* 30(6), 1275-1282.
9. **Osborne, M.J.**, Davenport, S.R., Hoagstrom, C.W., and T.F. Turner (2010) Genetic effective size tracks abundance in a small-bodied cyprinid, Pecos bluntnose shiner. *Molecular Ecology* 19(14), 2832-2844.
10. Turner, T.F., **Osborne, M.J.**, Dowling, T.E., McPhee, M.V., Broughton, R.E., and J.R. Gold (2009) Microsatellite markers for the endangered Razorback sucker, *Xyrauchen texanus*, are widely applicable to genetic studies of other catostomine fishes. *Conservation Genetics* 10, 551-553.
11. McPhee, M.V., **Osborne, M.J.**, and T.F. Turner (2008) Genetic diversity, population structure and demographic history of the Rio Grande sucker, *Catostomus (Pantosteus) plebius*, in New Mexico. *Copeia* 1, 191-199.
12. Turner, T.F., **Osborne, M.J.**, Moyer, G.R., Benavides, M.A., and D. Alò (2006) Life history and environmental variation interact to determine effective population to census size ratio. *Proceedings of the Royal Society of London, Series B* 273 (1605), 3065-73.
13. **Osborne, M.J.**, Benavides, M.A., Alò, D., and T.F. Turner (2006) Genetic effects of hatchery propagation and rearing in the endangered Rio Grande silvery minnow, *Hybognathus amarus*: A preliminary report. *Reviews in Fisheries Science- Special Edition* 14, 137-148.
14. **Osborne, M.J.**, Benavides, M. A., and T.F. Turner (2005) Genetic heterogeneity among pelagic egg samples and variance in reproductive success in an endangered freshwater fish, *Hybognathus amarus* (Cyprinidae). *Environmental Biology of Fishes* 73 (4), 462-472.
15. Moyer, G.R., **Osborne, M.J.**, and T.F. Turner (2005) Genetic and ecological dynamics of species replacement in an arid-land river system. *Molecular Ecology* 14 (4), 1263-1273.
16. **Osborne, M.J.**, Christidis, L., and J.A. Norman (2002) Molecular phylogenetics of the Diprotodontia (kangaroos, wombats, koala, possums and allies). *Molecular Phylogenetics and Evolution* 25, 219-228.
17. **Osborne, M.J.**, and L. Christidis (2002) Systematics and biogeography of pygmy possums (*Cercartetus*). *Australian Journal of Zoology* 50 (1), 25-37.
18. **Osborne, M.J.**, and L. Christidis (2002) Molecular relationships of cuscuses, brushtail and scaly-tailed possums. *Australian Journal of Zoology* 50, 135-149.
19. **Osborne, M.J.**, and L. Christidis (2001) Molecular phylogenetics of Australo-Papuan possums and gliders (Family Petauridae). *Molecular Phylogenetics and Evolution* 20 (2), 211-224.
20. **Osborne, M.J.**, Norman, J.A., Christidis, L., and N. Murray (2000) Genetic distinctness of isolated populations of an endangered marsupial, the mountain pygmy possum *Burramys parvus*. *Molecular Ecology* 9, 609-613.

## MANUSCRIPTS IN REVISION/ PREPARATION

- **Osborne, M.J.**, Diver, T.A., Hoagstrom, C.W. and Turner, T.F. Mitochondrial sampling of *Cyprinella lutrensis* from the Pecos River ‘melting pot’ reveals ancient and cryptic diversity that further expands the clade. *Evolution*, In Review.
- Carson, E.W., **Osborne, M.J.** and T.F. Turner. Individual-based, forward-time population genetic simulation as a monitoring and predictive tool in management of imperiled species. In prep, Intended for Evolutionary Applications.
- Wilson, W.D., **Osborne, M.J.** and T.F. Turner. Evolutionary Analysis of the MHC DAB in Salmonids: An examination of the cutthroat trout with comparisons to other salmonids. *Immunogenetics*, In revision.

## GRANTS, AND CONTRACTS- (TOTAL AMOUNT AWARDED- \$1,860,306 USD)

Pending	NATIONAL SCIENCE FOUNDATION IOS Proposal: Collaborative Research: Unraveling the infectious disease triangle: Evolution of virulence in a changing climate. A. Savage (PI), J. Collins (co-PI), M. Osborne (collaborator).
2014 -2016	U.S. DEPARTMENT OF THE INTERIOR U.S. Bureau of Reclamation: Lower Colorado River Multi-Species Conservation Program- Genetic and Demographic Studies to Guide Conservation Management of Bonytail Chub in Off-Channel Habitats. M. J. Osborne (PI), \$270,000.
2014	U.S. DEPARTMENT OF THE INTERIOR U.S. Bureau of Reclamation: Genetic monitoring of Rio Grande Silvery Minnow. M. Osborne (co-PI), E. Carson (PI) and T Turner (co-PI), \$166,450.
2013	U.S. DEPARTMENT OF THE INTERIOR U.S. Bureau of Reclamation: Lower Colorado River Multi-Species Conservation Program- Development and characterizing microsatellite DNA markers for assessing relatedness of Bonytail Chub produced in off-channel habitats. M. J. Osborne (PI), \$34,265.
2012-2014	U.S. DEPARTMENT OF THE INTERIOR U.S. Bureau of Reclamation: Great Plains LCC. Conservation priorities for Great Plains fish communities based on river-scape connectivity and genetic integrity of populations. K.B. Gido (PI), J.S. Perkin, T.F. Turner, M. J. Osborne, E.R. Johnson, K.B. Mayes (co-PIs). \$168,000 total funding (UNM share \$50,000).
2013-2014	NEW MEXICO DEPARTMENT OF GAME AND FISH Share with Wildlife Program: Genetic status of the Rio Grande shiner and speckled chub in the Pecos River, New Mexico. M.J. Osborne (PI). \$10,395.
2012-2014	U.S. DEPARTMENT OF THE INTERIOR U.S. Fish and Wildlife Service. Relationships of fish passage to genetic variation and self-sustainability. T. Turner (PI), M.J. Osborne, E. Carson (co-PIs). \$124,414.
2007-2012	U.S. DEPARTMENT OF THE INTERIOR

	U.S. Bureau of Reclamation/Middle Rio Grande Endangered Species Collaborative Program. Assessment and monitoring of Rio Grande silvery minnow genetics. M. Osborne (PI), T. Turner (co-PI), \$871,544.
2009-2010	NEW MEXICO DEPARTMENT OF GAME AND FISH Share with Wildlife Program. Genetic status of Arkansas River shiner and evaluation of hybridization among Pecos River cyprinids. M.J. Osborne (PI) \$8,000.
2009-2010	NEW MEXICO DEPARTMENT OF GAME AND FISH Share with Wildlife Program. Baseline genetic studies of the Chihuahua chub ( <i>Gila nigrescens</i> ). M.J. Osborne (PI) \$6,000.
2006-2007	U.S. DEPARTMENT OF THE INTERIOR U.S. Bureau of Reclamation/Middle Rio Grande Endangered Species Collaborative Program. Implementation of genetic methods to estimate the genetic effective size for the Rio Grande silvery minnow. M. Osborne (co-PI), T. Turner (PI). \$74,990.
2006-2009	U.S. DEPARTMENT OF THE INTERIOR U.S. Fish and Wildlife Service. Evaluation of the Rio Grande silvery minnow health in relation to changes in water quality, pathogens and other environmental stressors: Assessment of diversity at the major histocompatibility complex. M. Osborne (PI), T. Turner (co-PI). \$112,948 (genetics component).
2005-2006	NEW MEXICO DEPARTMENT OF GAME AND FISH      Share with Wildlife Program: Baseline genetic data for the threatened Pecos bluntnose shiner. M. Osborne (PI), T. Turner (co-PI). \$5,300.
2005-2006	U.S. DEPARTMENT OF THE INTERIOR U.S. Bureau of Reclamation/ Middle Rio Grande Endangered Species Collaborative Program. Conservation genetics of the Rio Grande silvery minnow. M. Osborne (co-PI), T. Turner (PI). \$126,000.

## RESEARCH COLLABORATIONS

- Dr. T. Dowling (Wayne State University) on research projects addressing conservation needs of fishes including the Bonytail Chub in lower Colorado River basin.
- Dr. K. Gido and Dr. Joshua Perkin at Kansas State University- Conservation priorities for Great Plains fish communities based on riverscape connectivity and genetic integrity of populations.
- Dr. W. Wilson (U.S. Fish and Wildlife) and T. Turner (UNM)- Examination of the genetic legacy of Gila Trout following the Whitewater Baldy Complex fire.
- Dr. E. Carson and T. Turner (UNM)- Relationships of fish passage to genetic variation and self- sustainability.
- Carter Kruse (Turner Enterprises) and Dr. Megan McPhee (University of Alaska). Population genetics of Rio Grande sucker- Turner et al. (In review).
- Emily Nebergall (Oregon State University)-Comparative transcriptomics of Chiricahua leopard frog.
- Dr. Anna Savage- Chiricahua leopard frog population genomics.
- Dr. D.L Propst (New Mexico Department of Game and Fish) and J. Monzingo (U.S. Forest Service)- Osborne et al. (2012).

- Dr. C.W. Hoagstrom (Weber State University) and Stephen Davenport (U.S. Fish and Wildlife Service)- Osborne et al. (2010) and ongoing comparative population genetics and demography of Pecos River cyprinids.
- J. Lusk (U.S. Fish and Wildlife)- Evaluation of the Rio Grande silvery minnow health in relation to changes in water quality, pathogens and other environmental stressors: Assessment of diversity at the major histocompatibility complex.
- C. Altenbach and T. Perez (City of Albuquerque, Rio Grande silvery minnow refugium)- Osborne et al. (2013).

## STUDENT SUPERVISION/ MENTORING

**Graduate Student Advising:** MS Students (3): Sierra Netz (M.S. student –graduated 2011), Tracy Diver (M.S. student – graduated 2013), Mary Brandenburg (expected graduation spring 2015).

**Honours Students (2):** Melissa Benavides (2004), Alana Sharp (2010).

**Undergraduate Students Trained (17):** Melissa Benavides (2002 - 2004, UMEB\*), Christine Cooper (2004 – 2006), Melvin Foster, Jr. (2004, UMEB), Melissa Martinez (2005), Tamara Max ( 2005, REU\*\*), Tracy Diver (2006 - 2010), Alana Sharp (2007-2010), Sierra Netz (2008), Jesse Trujillo (2009 – 2011, UnO\*\*\* Student), Ian Cuning (2010 - 2011), Thien Le (2010 - 2011), Samantha Sanchez (2011 - 2012), Michelle Sandoval (2011 - 2012), Hailey Conover (2012 - 2013), Jesse Perez-Baca (2013), Brennan Davis (2013), Alyssa Sanchez (2014-present).

(\*UMEB- Undergraduate Mentoring in Environmental Biology; \*\*REU- National Science Foundation Research Experience for Undergraduates; \*\*\* UnO- Undergraduate Opportunities).

## INVITED LECTURES AND PRESENTATIONS

- 2012 **Osborne, M.J.** and T.F. Turner. 'Wild at Heart': maintaining genetic diversity in an endangered species using alternative breeding and rearing strategies. Desert Fishes Council, California.
- 2011 **Osborne, M.J.** Genetic monitoring and complex population dynamics: insights from a 12-year study of the Rio Grande silvery minnow. Middle Rio Grande Endangered Species Collaborative Program Open House- Technical Session.
- 2010 **Osborne, M.J.** and T.F. Turner. Multi-locus major histocompatibility complex class IIB and parasite diversity in the Rio Grande silvery minnow. Joint meeting of North American Benthological Society and American Society of Limnology and Oceanography, Santa Fe, New Mexico, U.S.A.
- 2008 **Osborne, M.J.** Genetic monitoring of Rio Grande silvery minnow, 1998-2008. State of the Science Workshop, Middle Rio Grande Endangered Species Collaborative Program.
- 2007 **Osborne, M.J.** and T.F. Turner. Long-term genetic studies in the Rio Grande silvery minnow: An examination of the effects of population decline and supportive breeding. Middle Rio Grande Endangered Species Collaborative Program 2nd Annual Symposium.
- 2005 **Osborne, M.J.** Conservation genetics and demography of the Rio Grande silvery minnow. Guest lecture for Natural Resource Management, Furman University, North Carolina, USA.
- 2006 **Osborne, M.J.** and T.F. Turner. Genetic studies in the Rio Grande silvery minnow, 1999-2005. Middle Rio Grande Endangered Species Collaborative Program 1st Annual Symposium.

- 2004 **Osborne, M.J.** and T.F. Turner. Genetic consequence of population decline and supportive breeding in the Rio Grande silvery minnow, *Hybognathus amarus*, 1999-2004. Collaborative Program Advisory Panel, Albuquerque, NM.
- 2003 **Osborne, M.J.**, Benavides, M.A., Alò, D. and T.F. Turner. Genetic effects of hatchery propagation in the endangered Rio Grande silvery minnow. Governor's Symposium on the Rio Grande, sponsored by the Office of the Governor and the McCune Foundation, Sante Fe, NM.

#### **CONTRIBUTED PAPERS (SELECTED)**

- 2014 Perkin, J.S., Gido, K.B., Turner, T.F., **Osborne, M.J.** Multi-scale effects of stream fragmentation and dewatering on Great Plains fishes: community dynamics, species distributions, and genetic diversity. Society of Freshwater Science, Portland, Oregon.
- 2014 \*Perkin, J.S., Gido, K.B., Costigan, K.H., Daniels, M.D., Turner, T.F., **Osborne, M.J.**, Cooper, A.R., Johnson, E.R. and K.B. Mayes. Fish diversity loss among fragmented and dewatered riverscapes in the central Great Plains. American Fisheries Society Oklahoma and Texas Chapter Annual Meeting, Pottsboro, Texas.  
\*Awarded best student presentation.
- 2013 **Osborne, M.J.**, Diver, T.A., and T.F. Turner (2013) Introduced populations as genetic reservoirs for imperiled species: a case study of the Arkansas River shiner (*Notropis girardi*). Joint Meeting of American Society Ichthyologists and Herpetologists, Albuquerque, New Mexico.
- 2013 **Osborne, M.J.**, Sharp, A., Monzingo, J., Propst, D.L., and T.F. Turner. Genetic analysis suggests high conservation value of peripheral populations of Chihuahua chub (*Gila nigrescens*). Western Division American Fisheries Society- Arizona-New Mexico Chapter Meeting, Albuquerque, New Mexico.
- 2013 Turner, T.F., **Osborne, M.J.**, Propst, D.L. and Wilson, W.D. The genetic status of Gila trout after the Whitewater-Baldy Fire: implications for recovery. Western Division American Fisheries Society- Arizona-New Mexico Chapter Meeting, Albuquerque, New Mexico.
- 2012 Turner, T.F., and M.J. Osborne. From pariah to panacea and back: genetic monitoring and recovery planning for the endangered Rio Grande silvery minnow. Joint Meeting of American Society Ichthyologists and Herpetologists, Vancouver, Canada.
- 2010 Diver, T.A., **Osborne, M.J.**, and T.F. Turner. Genetic diversity of non-native fishes exceeds natives in the Pecos River, NM. North American Benthological Society 58th Annual Meeting, Santa Fe, NM, U.S.A.
- 2009 **Osborne, M.J.**, and T.F. Turner. Collaborative research and monitoring: Multi-locus major histocompatibility complex class IIB and parasite diversity in the Rio Grande silvery minnow. Joint Meeting of Ichthyologists and Herpetologists. Portland, Oregon, U.S.A.
- 2008 **Osborne, M.J.**, Diver, T.A., and T.F. Turner. Patterns of genetic diversity in a community of freshwater fish (Family Cyprinidae) in the Pecos River, New Mexico. Society for the Study of Evolution Annual Meeting, Minneapolis, USA.
- 2007 Swenton-Olson, D., Kodric-Brown, A., Turner, T.F., **Osborne, M.J.**, and W. Wilson. Behavioural and molecular evidence for hybridization between *Gambusia nobilis* and *Gambusia affinis*. Desert Fishes Council, Ventura, California, U.S.A.

- 2007 **Osborne, M.J.**, and T.F. Turner. Multi-locus MHC and parasite diversity in an endangered non-model cyprinid. Society for the Study of Evolution Annual Meeting, Christchurch, New Zealand.
- 2007 Turner, T.F., and **M.J. Osborne**. Lessons from multi-generational genetic monitoring of an endangered species. Society for the Study of Evolution Annual Meeting, Christchurch, New Zealand.
- 2006 **Osborne, M.J.**, and T.F. Turner. Baseline genetic survey of the Pecos bluntnose shiner. Desert Fishes Council, Death Valley, California, U.S.A.
- 2006 **Osborne, M.J.**, and T.F. Turner. Long-term genetic studies in the Rio Grande silvery minnow: An examination of effects of population decline and supportive breeding. Desert Fishes Council, Death Valley, California, U.S.A.
- 2006 Moyer, G.R., Turner, T.F., and **M.J. Osborne**. How did the Plains Minnow replace the Rio Grande silvery minnow in the Pecos River? Desert Fishes Council, Death Valley, California, U.S.A.
- 2006 Turner, T.F., and **M.J. Osborne**. Temporary population structure and its importance for evolution of freshwater fishes: Examples from the American southwest. Joint Meeting of Ichthyologists and Herpetologists. New Orleans, Louisiana, U.S.A.
- 2005 **Osborne, M.J.**, Benavides, M.A., and T. F. Turner. Genetic heterogeneity among pelagic eggs and variance in reproductive success in an endangered freshwater fish, *Hybognathus amarus*. Desert Fishes Council, Cuatro-ciénegas, Mexico.
- 2005 Turner, T.F., **Osborne, M.J.**, Moyer, G.R., Aló, D., and M.A. Benavides. Life-history dependent consequences of river fragmentation revealed by comparative genetic study of Rio Grande fishes. American Fisheries Society, Anchorage, Alaska, U.S.A.
- 2004 Turner, T.F., Moyer, G.R., **Osborne, M.J.**, and D. Aló. Genetic effects of fragmentation in arid land rivers. Evolution, Fort Collins, Colorado, U.S.A.
- 2004 Benavides, M.A., **Osborne, M.J.**, and T.F. Turner. Temporal genetic variability in pelagic eggs supports high variance in reproductive success in an endangered freshwater fish (*Hybognathus amarus*). Joint Meeting of Ichthyologists and Herpetologists. Norman, Oklahoma, U.S.A.
- 2003 Moyer, G.R., Aló, D., **Osborne, M.J.**, and T.F. Turner. A comparison of the genetic effective population size between the Rio Grande silvery minnow (*Hybognathus amarus*) and the plains minnow (*Hybognathus placitus*). Desert Fishes Council, Death Valley, California, U.S.A.
- 2003 Benavides, M.A., **Osborne, M.J.**, Aló, D., and T.F. Turner. Temporal genetic variability in pelagic eggs in the endangered Rio Grande silvery minnow. 88th Ecological Society of America Annual Meeting, Savannah, Georgia, USA.
- 2003 **Osborne, M.J.**, Benavides, M.A., Aló, D., and T.F. Turner. Genetic effects of hatchery propagation in the endangered Rio Grande silvery minnow. American Genetics Association: Conservation Genetics Meeting, Front Royal, Virginia, U.S.A.
- 2001 **Osborne, M.J.**, and L. Christidis. Molecular phylogenetics of the Diprotodontia. Australian Mammal Society Conference: Possums and Gliders Symposium, Brisbane, Australia.
- 2001 **Osborne, M.J.**, and L. Christidis. Systematics and biogeography of pygmy possums (*Cercartetus*). Australian Mammal Society Conference: Possums and Gliders Symposium, Brisbane, Australia.



## TECHNICAL REPORTS (SELECTED)

- 2013 **Osborne, M.J.** Under the radar: Genetic status of *Notropis jemezanus* and *Macrhybopsis aestivalis* in the Pecos River, New Mexico. Final Report to New Mexico Department of Game and Fish, Santa Fe, New Mexico, 22 pp.
- 2013 Turner, T.F, **Osborne, M.J.**, Pilger, T.F. and D.L Propst. Genetic studies of Rio Grande Sucker with emphasis on the Gila River Basin. Final Report to New Mexico Department of Game and Fish, Santa Fe, New Mexico, 20 pp.
- 2012 **Osborne, M.J.** and T.F. Turner. Genetic monitoring of the Rio Grande silvery minnow: genetic status of wild and captive stocks in 2012. Final Report to Middle Rio Grande Endangered Species Collaborative Program, U.S. Bureau of Reclamation, Albuquerque New Mexico, 35 pp.
- 2011 **Osborne, M.J.** and T.F. Turner. Genetic monitoring of the Rio Grande silvery minnow: genetic status of wild and captive stocks in 2011. Report to Middle Rio Grande Endangered Species Collaborative Program, U.S. Bureau of Reclamation, Albuquerque New Mexico, 28 pp.
- 2010 **Osborne, M.J.**, Diver, T.A. and T.F. Turner. Genetic status of the Arkansas River shiner and evaluation of hybridization among cyprinid fish in the Pecos River, New Mexico. Final Report to New Mexico Department of Game and Fish, Santa Fe, New Mexico, 20 pp.
- 2010 **Osborne, M.J.**, Sharp, A.S. and T.F. Turner. Baseline genetics of the Chihuahua chub. Final Report to New Mexico Department of Game and Fish, Santa Fe, New Mexico, 22 pp.
- 2009 **Osborne, M.J.** and T.F. Turner. Collaborative research and monitoring: Evaluation of the Rio Grande silvery minnow health in relation to changes in water quality, pathogens and other environmental stressors: Multi-locus major histocompatibility complex class II $\beta$  and parasite diversity in the Rio Grande silvery minnow. Final Report to U.S. Fish and Wildlife Service, Albuquerque, New Mexico, 43 pp.
- 2009 **Osborne, M.J.** and T.F. Turner. Genetic monitoring of the Rio Grande silvery minnow: genetic status of wild and captive stocks in 2009. Report to Middle Rio Grande Endangered Species Collaborative Program, U.S. Bureau of Reclamation, Albuquerque New Mexico, 30 pp.
- 2009 **Osborne, M.J.** and T.F. Turner. Baseline genetic survey of the threatened Pecos bluntnose shiner (*Notropis simus pecosensis*). Final Report to New Mexico Department of Game and Fish, Santa Fe, New Mexico, 31 pp.
- 2008 **Osborne, M.J.** and T.F. Turner. Baseline genetic survey of the threatened Pecos bluntnose shiner (*Notropis simus pecosensis*). Interim Report submitted to the New Mexico Department of Game and Fish, Santa Fe, New Mexico, 25 pp.
- 2007 **Osborne, M.J.** and T.F. Turner. Genetic monitoring of the Rio Grande silvery minnow: genetic status of wild and captive stocks in 2007. Annual report submitted to the U. S. Bureau of Reclamation, Albuquerque, New Mexico, 30 pp.
- 2006 **Osborne, M.J.** and T.F. Turner. Genetic monitoring in the Rio Grande silvery minnow: Genetic status in 2006. Annual report submitted to the U. S. Bureau of Reclamation, Albuquerque, New Mexico, 25 pp.
- 2005 Turner, T.F. and M.J. Osborne. Genetic studies in the Rio Grande silvery minnow (*Hybognathus amarus*). Final report submitted to the U. S. Bureau of Reclamation, Annual report submitted to the U. S. Bureau of Reclamation, Albuquerque, New Mexico.

- 2004 Turner, T. F. and M.J. Osborne. Genetic consequences of supportive breeding in the endangered Rio Grande silvery minnow (*Hybognathus amarus*): a genetic evaluation of wild and captive-reared and propagated stocks, 1999-2004. Annual report submitted to the U. S. Bureau of Reclamation, Annual report submitted to the U. S. Bureau of Reclamation, Albuquerque, New Mexico, 34 pp.
- 2003 Turner, T.F., **Osborne, M.J.** and D. Aló. Conservation genetics of the Rio Grande silvery minnow, *Hybognathus amarus*: Genetic evaluation of wild and captive stocks, 1999-2003. A report submitted to the New Mexico Department of Game and Fish. Santa Fe, New Mexico, 80 pp.
- 1999 **Osborne, M.J.**, Norman, J.A. and L. Christidis. Population genetics of the mountain pygmy possum, *Burrmys parvus* in the Kosciuszko National Park. Report to New South Wales National Parks and Wildlife Service.

## AWARDS

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- 1999 La Trobe University Postgraduate Research Scholarship

## PROFESSIONAL TRAINING/DEVELOPMENT

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- 2012 Science: Becoming the messenger. National Science Foundation, Albuquerque, New Mexico. Participant.
- 2012 Pathway to Transforming Student Learning and Persistence in Gateway Science and Math Courses. Office of Support for Effective Teaching, University New Mexico, Albuquerque, New Mexico. Participant.
- 2009 ConGen – Population genetics data analysis course (4th edition). Montana. Selected to be one of 25 participants in this course; providing training by leading researchers and software developers in conceptual and practical aspects of analyzing population genetics data sets.

## PROFESSIONAL AND COMMUNITY ENGAGEMENT

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- Technical advisor, Conservation Action Plan for the Middle Rio Grande (Middle Rio Grande Conservancy District).
- Technical advisor, Chihuahua chub and Gila trout recovery team
- Technical advisor, Rio Grande Silvery Minnow Recovery Plan (U.S. Fish and Wildlife Service).
- Technical advisor, Rio Grande Silvery Minnow Genetics Management and Propagation Plan (U.S. Fish and Wildlife Service).
- Technical reviewer, Pecos Bluntnose Shiner 5-year Review, U.S. Fish and Wildlife Service, Albuquerque NM.
- Member, Rio Grande silvery minnow controlled propagation and genetics working group.
- Member, Rio Grande silvery minnow population viability analysis technical working group.
- Member, Rio Grande silvery minnow Big Bend reintroduction technical team (U.S. Fish and Wildlife Service).
- Reviewer for 'Ecology of North American Freshwater Fishes'.
- Invited external proposal reviewer, NOAA Sea Grant Program, CALFED: Delta Science Program, Texas State Comptrollers Office.
- Reviewer, Graduate student scholarship proposals, University of New Mexico, Department of Biology, 2010, 2011, 2012, 2014.
- Judge Research Day (2009, 2011, 2012, 2013), University of New Mexico, Department of Biology.
- Invited Panelist, Student Colloquium session, Western Division American Fisheries Society Meeting, Albuquerque, 2009.
- Member: American Genetics Association, Society of Ichthyology and Herpetology, Desert Fishes Council, USA.
- Member: Australian Society of Fish Biology.

- Co-organiser- Desert Fishes Council Symposium: “Evolutionary Ecology of Protected Species- Refuges & Restoration”, November 2012.
- Co-organiser- Pecos River Special Session, Western Division American Fisheries Society Meeting, Albuquerque, 2009.
- Ad hoc reviewer: Aquatic Biology, Biological Conservation, BMC Evolutionary Biology, Conservation Genetics, Ecology and Evolution, Environmental Biology of Fishes, Evolution, Fish and Fisheries, Heredity, Journal of Biogeography, Journal of Heredity, Marine Biology, Molecular Phylogenetics and Evolution, Molecular Biology and Evolution, Molecular Ecology Transactions of the American Fisheries Society.