

Products & Partners for the BUOW project initiated by the DoD Legacy Program

The Burrowing Owl project funded by the DoD Legacy program has been very successful at bringing together a wide diversity of project partners on this continental-scale project. We had 39 DoD installations that participated as project partners, 16 partner organizations in the U.S. and Canada, and 17 partner organizations in Mexico. These partners contributed \$416,918 in actual dollars to the project and they provided >\$100,000 in in-kind contributions (use of field vehicles, conducting surveys, trapping owls, collecting feather and blood samples, etc.). The project also generated many products thus far: 10 papers published in peer-reviewed scientific journals, 4 graduate theses, 16 technical reports, 13 DoD technical products (protocols, fact sheets, etc), 8 articles/programs in the popular press, 40 presentations at regional, national, and international meetings, 17 awards given to graduate students on the project, and substantial technical assistance. Below is a list of these products and partners:

Peer-reviewed Publications

1. Holroyd, G., C. J. Conway, and H. Trefry. 2011. Breeding Dispersal of a Burrowing Owl from Arizona to Saskatchewan. *Wilson Journal of Ornithology* 123:378-381.
2. Macias-Duarte, A., C. J. Conway, A. Munguia-Vega, and M. Culver. 2010. Novel microsatellite loci for the Burrowing Owl, *Athene cucularia*. *Conservation Genetics Resources* 2:67-69.
3. Ogonowski, M. S., and C. J. Conway. 2009. Migratory decisions in birds: extent of genetic versus environmental control. *Oecologia* 161:199-207.
4. Garcia, V., and C. J. Conway. 2009. Use of video probe does not affect burrowing owl reproductive parameters or return rates. *Journal of Wildlife Management* 73:154-157.
5. Lantz, S. J., and C. J. Conway. 2009. Factors affecting daily nest survival of burrowing owls within black-tailed prairie dog colonies. *Journal of Wildlife Management* 73:232-241. (this article was selected by the editor as the feature article for the issue's cover).
6. Garcia, V., and C. J. Conway. 2009. What constitutes a nesting attempt? Variation in criteria causes bias and hinders comparisons across studies. *The Auk* 126:31-40.
7. Conway, C. J., V. Garcia, M. D. Smith, and K. Hughes. 2008. Factors affecting detection of burrowing owl nests during standardized surveys. *Journal of Wildlife Management* 72:688-696.
8. Lantz, S. J., C. J. Conway, and S. H. Anderson. 2007. Multi-scale habitat selection by burrowing owls in black-tailed prairie dog colonies. *Journal of Wildlife Management* 71:2664-2672.

9. Conway, C. J., V. Garcia, M. D. Smith, L. A. Ellis, and J. Whitney. 2006. Comparative demography of burrowing owls within agricultural and urban landscapes in southeastern Washington. *Journal of Field Ornithology* 77:280-290.
10. Conway, C. J., and V. Garcia. 2005. Effects of radiotransmitters on natal recruitment of burrowing owls. *Journal of Wildlife Management* 69:404-408.

Theses

Macias-Duarte, A. In prep. Migratory linkages of burrowing owls throughout North America. Ph.D. Dissertation, School of Natural Resources, University of Arizona, Tucson, AZ.

Ogonowski, M. S. 2007. Factors influencing migratory decisions of western Burrowing Owls. M.S. Thesis, School of Natural Resources, University of Arizona, Tucson, AZ.

Garcia, V. 2005. Effects of food and ectoparasites on age of natal dispersal in burrowing owls. M.S. Thesis, School of Natural Resources, University of Arizona, Tucson, AZ.

Lantz, S. J. 2005. Nesting Ecology and Habitat Selection of Western Burrowing Owls (*Athene cunicularia hypugaea*) in the Thunder Basin National Grassland, Northeastern Wyoming, M.S. Thesis, Department of Zoology and Physiology, University of Wyoming, Laramie WY.

Technical Reports

Cruz-McDonnell, K. and O. Cruz-Carretero. 2008. Annual report on population status, reproductive success, and site fidelity of western Burrowing Owls (*Athene cunicularia hypugaea*) on Kirtland Air Force Base, 2008. Albuquerque, NM. Envirollogical Services, Inc.

Conway, C. J., M. S. Ogonowski, and A. Macias Duarte. 2007. Influence of land-use on migratory status of burrowing owls nesting in Casa Grande Ruins National Monument and wintering in northern Mexico. Wildlife Research Report #2007-03. USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

Cruz-McDonnell, K. and O. Cruz-Carretero. 2007. Annual report on population status, reproductive success, and site fidelity of western Burrowing Owls (*Athene cunicularia hypugaea*) on Kirtland Air Force Base, 2007. Albuquerque, NM. Envirollogical Services, Inc.

Cruz-McDonnell, K. and O. Cruz-Carretero. 2007. Burrowing Owl Management Plan for Kirtland Air Force Base. Albuquerque, NM. Envirollogical Services, Inc.

Cruz-McDonnell, K. and O. Cruz-Carretero. 2007. Surveys for wintering Burrowing Owls (*Athene cunicularia*) in southern New Mexico, the Texas Coastal Bend, and northern Mexico. Albuquerque, NM. Envirollogical Services, Inc.

Garcia, V., C. J. Conway, and L. A. Ellis. 2007. Protocols for estimating burrowing owl reproductive parameters based on data recorded during repeated visits to occupied burrows. Wildlife Research Report #2007-06, USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ

Garcia, V., and C. J. Conway. 2007. Plan to conserve and manage burrowing owls on Naval Base Coronado. Wildlife Research Report #2007-05, USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

Rosenberg, D. K., J. Gervais, C. J. Conway, and V. Garcia. 2007. Assessment of foot and leg abnormalities in the Burrowing Owl at Naval Air Station Lemoore. Final Report submitted to Naval Facilities Engineering Command, Southwest, San Diego, CA.

McDonnell, K. and O. Cruz-Carretero. 2006. Annual report on population status, reproductive success, prey delivery, and site fidelity of western Burrowing Owls (*Athene cunicularia hypugaea*) on Kirtland Air Force Base, 2006. Albuquerque, NM. Envirollogical Services, Inc.

McDonnell, K. and O. Cruz-Carretero. 2006. Use of radio-telemetry to determine wintering grounds of Burrowing Owls (*Athene cunicularia*). Albuquerque, NM. Envirollogical Services, Inc.

Ogonowski, M. S. and C. J. Conway. 2006. Migratory status and factors influencing winter residency of burrowing owls in southern Arizona. Final Report submitted to the Arizona Bird Conservation Initiative, Arizona Game and Fish Department, Phoenix, AZ.

Conway, C. J., and M. S. Ogonowski. 2005. Determining migratory status of burrowing owls in the Tucson Basin. Final Report to Arizona Bird Conservation Initiative. Wildlife Research Report #2005-06, USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

Conway, C. J., L. A. Ellis, V. Garcia, M. D. Smith. 2005. Population ecology and habitat use of burrowing owls in eastern Washington. Final Report. Wildlife Research Report #2005-02, USGS Arizona Cooperative Fish and Wildlife Research Unit, Tucson, AZ.

McDonnell, K. and O. Cruz-Carretero. 2005. Annual report on population status, reproductive success, prey delivery, and site fidelity of western Burrowing Owls (*Athene cunicularia hypugaea*) on Kirtland Air Force Base, 2005. Albuquerque, NM. Envirollogical Services, Inc.

McDonnell, K. and O. Cruz-Carretero. 2005. Collaborative efforts to determine wintering grounds and habitat quality for Burrowing Owls (*Athene cunicularia*) in México. Albuquerque, NM. Envirological Services, Inc.

Ellis, L. A., C. J. Conway, and M. S. Ogonowski. 2004. Demography of urban-nesting Burrowing Owls (*Athene cunicularia*) in southern Arizona. USGS Arizona Cooperative Fish and Wildlife Research Unit, Wildlife Research Report #04-04.

Technical Products to DoD:

Ellis, L. A., C. P. Nadeau, C. J. Conway, V. Garcia, and A. Macias-Duarte. 2008. Feather collection protocol for burrowing owls.

Nadeau., C. P., C. J. Conway, L. A. Ellis, and V. Garcia. 2008. Protocol for measuring morphological traits of burrowing owls.

Garcia, V., C. J. Conway, and C. A. Finley. 2008 and 2005. Project Factsheet: Migratory linkages of burrowing owls on DoD installations and adjacent lands.

Garcia, V., and C. J. Conway. Unpubl. data. 2007 and 2006. GPS coordinates of burrowing owls nests on DoD installations.

Conway, C. J., and C. A. Finley. 2006. Migratory linkages of burrowing owls on DoD installations and adjacent lands. 2005 final report and 2006 half-year report, April 2006.
Garcia, V., and C. J. Conway. 2006. Briefing on BASH Recommendations.

Conway, C. J., C. A. Finley, and V. Garcia. 2006. Migratory linkages of burrowing owls on DoD installations and adjacent lands. 2006 annual report, December 2006.

Conway, C. J., C. A. Finley, and V. Garcia. 2006. Project Pamphlet: Migratory linkages of burrowing owls on DoD installations and adjacent lands.

Conway, C. J., C. A. Finley, and V. Garcia. 2006. Project Presentation: Migratory linkages of burrowing owls on Department of Defense installations and adjacent lands.

Ellis, L. A., C. P. Nadeau, C. J. Conway, V. Garcia, and A. Macias-Duarte. 2006. Blood collection protocol for burrowing owls.

Garcia, V., and C. J. Conway. 2006. Literature Review for Monitoring Burrowing owls on DoD Installations.

Garcia, V., and C. J. Conway. 2006. Unpubl. data. 2006 burrowing owl baseline data.

Garcia, V., C. J. Conway, L. A. Ellis, and C. P. Nadeau. 2006. Standardized monitoring strategies for burrowing owls on DoD Installations. Arizona Cooperative Fish and Wildlife Research Unit.

Conway, C. J., and C. A. Finley. 2005. Migratory linkages of burrowing owls on DoD installations and adjacent lands. Semi-annual report, October 2005.

Popular Articles and Press:

DeVries, S. S. 2007. Base participates in burrowing owl study. Air Force Print News Today. (Air Force newsletter article on 25 July 2007 featuring our research project examining migratory linkages among burrowing owl populations throughout western North America).

Pach, M. J. 2007. Owl research is a hoot. Fort Carson Mountaineer 65:26-27. (Newspaper article in Fort Carson, Colorado on 13 July 2007 featured text and 7 color pictures explaining the goals and field methods involved with our research project examining migratory linkages of burrowing owls across western North America.).

Littlefield, J. 2006. Making a Home in the Desert: Burrowing Owl Ecology and Conservation Studies. Arizona Land and People 51(1):2-3.

Garcia, V., and C. J. Conway. 2005. When is it time to leave home? Factors that influence natal dispersal age in burrowing owls. Bluebird 27:18-19.

Macias-Duarte, A, and C. J. Conway. 2005. In the Spotlight: Importance of Northwestern Mexico in the Conservation of Burrowing Owls. Sonoran Joint Venture E-Bulletin 2(4).

The Tri-City Herald (one of the 2 largest newspapers in eastern Washington) ran a front-page story explaining how our research on Burrowing Owls in eastern Washington is helping state and federal land management agencies in the region set policy for this species of management concern (“Burrowing Owls Face Uncertain Future”). 15 Aug 2005.

Article appeared in one of Seattle’s largest morning newspapers (the Seattle Post-Intelligencer) that highlighted our research on burrowing owls in eastern Washington. 17 Jul 2004.

Northwest Public Radio visited one of our study sites and did a 6-minute story “Burrowing Owl Habitat Threatened by Development” on their program *Morning Edition*. The radio piece highlighted how our project was helping land management agencies in the region resolve problems caused by urban development. 15 Mar 2004.

Technical Presentations

Cruz-McDonnell, K. and O. Cruz-Carretero. 2008. Wintering Burrowing Owls. Festival of the Cranes. Bosque del Apache NWR. Socorro, New Mexico. Scheduled for 19 November 2008.

Macias-Duarte, A. and C. J. Conway. 2008. Change in migratory behavior as a possible explanation for burrowing owl population declines in northern latitudes. Sonoran Joint Venture Technical Committee Meeting. Hermosillo, Sonora, Mexico. 1 May 2008.

Garcia, V., and C. J. Conway. 2008. When a protected predator eats an endangered prey; managing burrowing owls that eat California least terns. American Ornithologists' Union, Portland, OR. 7 August 2008.

Garcia, V., and C. J. Conway. 2008. Burrowing owl conservation in the presence of an endangered prey species. 41st Joint Annual Meeting of the Arizona/New Mexico Chapters of The Wildlife Society and American Fisheries Society. Prescott, AZ. 8 February 2008.

Garcia, V., and C. J. Conway. 2008. Development of a 10-year management plan for Burrowing Owls on Naval Base Coronado. Arizona Cooperative Fish and Wildlife Research Unit, Annual Cooperators Meeting, Tucson, AZ. 12 February 2008.

Conway, C. J. 2008. Burrowing Owl research in Imperial County, San Diego County, and throughout the western U.S. California Burrowing Owl Consortium Annual Meeting. Brawley, CA. 14 February 2008. INVITED. **Panel Speaker.**

Ogonowski, M. S., and C. J. Conway. 2008. Factors influencing migratory decisions of western burrowing owls. Annual Meeting of the Western Section of The Wildlife Society. Redding, CA. 5 February 2008. INVITED.

Conway, C. J. 2008. Glyphosate applications to control invasive bufflegrass in the Avra Valley: effects on burrowing owls. City of Tucson Technical Advisory Committee meeting. Tucson, AZ. 16 January 2008. INVITED.

Garcia, V., and C. J. Conway. 2007. Experiment to test how repeatedly video probing active nests influences nesting success in burrowing owls. The Wildlife Society Annual Conference. Tucson, AZ. 25 September 2007.

Garcia, V., and C. J. Conway. 2007. Influence of repeated use of a video probe on nesting success of burrowing owls. American Ornithologists' Union. Laramie, WY. 11 August 2007.

McDonnell, K., O. Cruz-Carretero, C. Finley. 2007. Migratory Linkages of Burrowing

Owls on DoD Installations. National Military Fish and Wildlife Association Conference. Portland, Oregon. 22 March 2007.

Cruz-Carretero, O. and V. Bailey. 2007. Wintering Burrowing Owls. Festival of the Cranes. Bosque del Apache NWR. Socorro, New Mexico. November 2007.

Garcia, V., and C. J. Conway. 2007. Influence of repeated video probing at burrows on nesting success of burrowing owls. 40th Joint Annual Meeting of the Arizona/New Mexico Chapters of The Wildlife Society and American Fisheries Society. Albuquerque, NM. 8 February 2007.

Ogonowski, M. S., and C. J. Conway. 2007. To migrate or not? Factors influencing winter residency in western burrowing owls. 40th Joint Annual Meeting of the Arizona/New Mexico Chapters of The Wildlife Society and American Fisheries Society. Albuquerque, NM. 8 February 2007.

Ogonowski, M. S., and C. J. Conway. 2007. Is migration a matter of choice? Migratory behavior of western burrowing owls in southern Arizona. The Wildlife Society Annual Conference. Tucson, AZ. 24 September 2007.

Conway, C. J., B. Ball, L. A. Ellis, and C. P. Nadeau. 2007. Growing crops in the desert; Does irrigated agriculture create an 'ecological trap' for burrowing owls? 40th Joint Annual Meeting of the Arizona/New Mexico Chapters of The Wildlife Society and American Fisheries Society. Albuquerque, NM. 8 February 2007.

Macias-Duarte, A., C. J. Conway, and M. Culver. 2007. Expansion of irrigated agriculture in northwestern Mexico and population declines of burrowing owls in northern latitudes. The Wildlife Society Annual Conference. Tucson, AZ. 24 September 2007.

Macias-Duarte, A., C. J. Conway, and M. Culver. 2006. Change in migratory behavior and population declines of Burrowing Owls in northern latitudes. Third international Burrowing Owl Symposium. IV North American Ornithological Conference. Veracruz, Mexico. 2 October 2006.

Garcia, V., and C. J. Conway. 2006. Effect of latitude, clutch initiation date, and re-nesting on clutch size in Burrowing Owls. IV North American Ornithological Conference. Veracruz, Mexico. 7 October 2006.

Ogonowski, M. S., and C. J. Conway. 2006. Factors influencing winter residency of burrowing owls in southern Arizona. North American Ornithological Conference. Veracruz, Mexico. 6 October 2006.

Conway, C. J., C. P. Nadeau, M. D. Smith, and D. R. Rosenberg. 2006. Do burrowing owls bring mammal manure to their nests to lure prey? IV North American Ornithological Conference. Veracruz, Mexico. 3 October 2006.

Conway, C. J. 2006. The effect of land use on burrowing owl population trend varies by latitude in North America. IV North American Ornithological Conference. Veracruz, Mexico. 2 October 2006.

Cruz-Carretero, O.G. and K.K. McDonnell. 2006. Collaborative efforts to determine wintering grounds and habitat quality for Burrowing Owls in Mexico. Third international Burrowing Owl Symposium. IV North American Ornithological Conference. Veracruz, Mexico. 2 October 2006.

Cruz-Carretero, O.G., and K.K. McDonnell. 2006. Collaborative efforts to determine wintering grounds and habitat quality for Burrowing Owls (*Athene cunicularia*) in México. Poster presentation for the IV North American Ornithological Conference. Veracruz, Mexico. 6 October 2006.

Cruz-Carretero, O. and K. McDonnell. 2006. Results of the Collaborative Efforts to Determine Wintering Grounds and Habitat Quality for Burrowing Owls in Mexico. New Mexico Burrowing Owl Working Group Workshop. Albuquerque, New Mexico. 10 May 2006.

McDonnell, K. and V. Bailey. 2006. Wintering Burrowing Owls. Festival of the Cranes. Bosque del Apache NWR. Socorro, New Mexico. November 2006.

Cruz-Carretero, O. and K. McDonnell. 2006. Western Burrowing Owls (*Athene cunicularia hypugaea*) on Kirtland Air Force Base and Mexico 2005. Presentation for Base Commander of Kirtland Air Force Base. Albuquerque, New Mexico. January 2006.

Cruz-Carretero, O. and K. McDonnell. 2005. Western Burrowing Owls (*Athene cunicularia hypugaea*) on Kirtland Air Force Base and Mexico 2005. New Mexico Burrowing Owl Working Group Workshop. Bosque del Apache NWR. Socorro, New Mexico. 8 December 2005.

Cruz-Carretero, O.G. 2005. Búhos Llaneros (*Athene cunicularia*) biología y conservación. Presentation for the Festival: October, Month of the Birds. Instituto Estatal de Ecología de Oaxaca. Oaxaca City, Oaxaca. 19 October 2005.

Conway, C. J., G. Holroyd, D. R. Rosenberg, and J. Duxbury. 2005. Comparative demography of burrowing owls within changing grassland ecosystems of North America: Effects of land-use, migratory tendency, and latitude. Special Symposium on Birds in Changing Grassland Landscapes: Ecological and Management Implications. The Wildlife Society 12th Annual Conference, Madison, WI. 28 September 2005. INVITED

Garcia, V., and C. J. Conway. 2005. What is a nest? Influence of nest definition on estimates of nesting success in Burrowing Owls. American Ornithologists' Union. Santa Barbara, CA. 24 August 2005.

Conway, C. J. 2005. Why migrate? Tests of alternative hypotheses in Burrowing Owls. American Ornithologists' Union. Santa Barbara, CA. 24 August 2005.

Macias-Duarte, A., and C. J. Conway. 2005. Change in migratory behavior as a possible explanation for burrowing owl population declines in northern latitudes. New Mexico Burrowing Owl Working Group Workshop. Bosque del Apache NWR, NM. 8 December 2005. INVITED.

Ogonowski, M. S., and C. J. Conway. 2005. Ecology and Migratory Behavior of Burrowing Owls in southern Arizona. Arizona Cooperative Fish and Wildlife Research Unit Annual Cooperator's Meeting. Tucson, AZ. 29 March 2005.

Macias-Duarte, A., and C. J. Conway. 2005. Cambio en comportamiento migratorio de *Athene cunicularia* y su disminución poblacional en latitudes septentrionales. Russell E. Train Education for Nature Programmatic Meeting. World Wildlife Fund. Mexico City, Mexico. 1 December 2005. INVITED.

Conway, C. J. 2005. Ecology and natural history of burrowing owls. Casa Grande Ruins National Monument. Coolidge, AZ. 15 January 2005. INVITED

Macias-Duarte, A., and C. J. Conway. 2005. Cambio en comportamiento migratorio de *Athene cunicularia* y su disminución poblacional en latitudes septentrionales. Escuela de Biología, Universidad Autónoma de Sinaloa. Culiacán, Sinaloa, Mexico. 26 April 2005. INVITED.

Lantz, S. J., C. J. Conway, and S. H. Anderson. 2004. Demographic trends and habitat relationships of Burrowing Owls (*Athene cunicularia*) in Thunder Basin National Grasslands, northeastern Wyoming, 2001-2004. Wyoming Chapter of The Wildlife Society. Dubois, WY. 1 December 2004. S. Lantz won *Best Student Paper Award*.

Conway, C. J. 2004. The status of the Burrowing Owl in the United States. North American Conservation Action Plan: Development of Grassland Species of Common Conservation Concern. Calgary, Alberta, CANADA. 19 July 2004. INVITED.

Lantz, S., C. J. Conway, and S. H. Anderson. 2004. The Ecology of Burrowing Owls Within Black-tailed Prairie Dog Colonies in the Thunder Basin National Grasslands. Second Symposium of the Thunder Basin Grasslands Prairie Ecosystem Association: Collaborative Implementation of Ecosystem Management in the Thunder Basin of Wyoming. Casper, WY. 12 May 2004. INVITED.

Awards/Grants received by graduate students on project

Mark Ogonowski received a 2006 Travel Grant from the Graduate and Professional Student Council, University of Arizona.

Mark Ogonowski received a 2006 Silliman Memorial Research Award in Ornithology, The University of Arizona.

Mark Ogonowski received a 2006 CATTs Fellowship from the University of Arizona helping deliver professional development workshops for elementary science teachers.

Mark Ogonowski received a STAR Fellowship (Science to Achieve Results) from the U.S. Environmental Protection Agency, 2004-05.

Mark Ogonowski received a 2004 Budweiser National Conservation Scholarship from the National Fish and Wildlife Foundation.

Alberto Macias-Duarte received a 2008-2009 BioME - iPlant Collaborative Graduate Fellowship. BIO5 Institute. The University of Arizona.

Alberto Macias-Duarte received a 2007 William Calder III Memorial Scholarship from the Department of Ecology and Evolutionary Biology at the University of Arizona.

Alberto Macias Duarte received a 2008 Travel Grant from the Graduate and Professional Student Council, University of Arizona.

Alberto Macias-Duarte received a 2007 International Wildlife Foundation Scholarship, College of Agriculture and Life Sciences, The University of Arizona.

Alberto Macias-Duarte received a 2006 William Calder III Memorial Scholarship from the Department of Ecology and Evolutionary Biology at the University of Arizona.

Alberto Macias-Duarte received a 2006 Silliman Memorial Research Award in Ornithology, The University of Arizona.

Alberto Macias-Duarte received a 2006 Student Research Award from the American Ornithologists' Union.

Alberto Macias-Duarte received a 2006-07 Tuition and Registration Scholarship from University of Arizona's Graduate College based on meritorious academic achievements

Alberto Macias-Duarte received a 2005 Tinker Research Award from the Center for Latin America Studies of the University of Arizona.

Alberto Macias-Duarte received a 2004 Russell E. Train Scholarship from the World Wildlife Fund.

Alberto Macias-Duarte received a 2004 Graduate Tuition Scholarship from the University of Arizona.

Alberto Macias-Duarte received a 2003-2007 CONACYT Graduate Fellowship from the Mexican government.

Advice/Technical Support:

Many DoD installations have asked us to provide guidance on issues related to burrowing owl management on airfields and many have enquired about the results of the genetic and stable isotope analyses.

3 DoD installations approached us to produce/provide additional products related to burrowing owls on their installations: 1) Naval Base Coronado had us write a 10-year management plan for burrowing owls and conduct detailed surveys, banding, and monitoring of the owls on their base due to management challenges that arose when the burrowing owls would occasionally forage at the California Least Tern colony; 2) Naval Air Station Lemoore had us produce a review document summarizing the frequency of deformities observed in burrowing owl populations to determine whether the frequency observed at Navy Air Station Lemoore was higher than elsewhere within their breeding range, 3) M. Ogonowski and C. Conway were asked to serve an advisory role to the Bird Hazards Working Group at Davis-Monthan Air Force Base to review status of burrowing owls and success of efforts to reduce bird hazards to aircraft on the Base.

We developed and put-on many training workshops attended by >20 biologists from Department of Defense from across the western U.S. Handled all aspects of organization, logistics, and training associated with the workshop.

We organized the *Third International Burrowing Owl Symposium* at the North American Ornithological Conference in Veracruz, Mexico. The symposium was a full-day of presentations and round-table discussions on the conservation, management, and ecology of Burrowing Owls in North America. 3 October 2006.

We have contributed to the Sonoran Joint Venture conservation plan. A. Macias-Duarte has gone to all technical committee meetings and participated in the writing of a part of the plan (the Mexican highlands section). At the most recent SJV meeting in Sonora, Mexico, he gave a presentation to agencies from both the federal (from Mexico City) and state levels in both Mexico and the U.S. (presented in both English and Spanish).

We were invited to participate and present a talk at the Working Group for the West Mojave Conservation Plan. C. Conway was invited as 1 of 3 external experts on the Burrowing Owl to provide expert opinion to the Working Group which consists of representatives from city, county, state (CDFG), and federal governments (USFWS, BLM). San Bernardino, CA, 23 June 2008.

C. Conway was invited as 1 of 12 experts from Canada, the U.S., and Mexico to develop a North American Conservation Action Plan (NACAP) for Burrowing Owls by the Tri-national Commission for Environmental Cooperation. Asked to be the U.S. lead scientist at a 3-day workshop in Calgary, Alberta to outline the conservation plan. Presented an overview

of the most important management issues related to Burrowing Owls in the U.S. Burrowing owls are listed as 1 of only 6 priority species in the North American Trilateral Agreement.

We were asked to review and comment on the state-wide guidelines for survey protocols and mitigation measures for burrowing owls in New Mexico by the New Mexico Game and Fish Department and in Arizona by the Arizona Game and Fish Department.

We were asked by the Colorado Division of Wildlife to provide advice on burrowing owl survey methods suitable to ensure NEPA clearance.

U.S. and Canadian Partners and Their Contributions

U.S. Geological Survey (field vehicles, C Conway salary) - \$52,000

U.S. Environmental Protection Agency (funds) - \$70,082

National Fish and Wildlife Foundation (funds) - \$40,000

World Wildlife Fund (funds) - \$22,000

U.S. Fish and Wildlife Service (funds) - \$12,500

National Park Service (funds) - \$10,000

U.S. Department of Energy (field work to collect samples) - \$3,000

Arizona Game and Fish Department (funds) - \$1,000

City of Tucson (funds) - \$24,998

American Ornithologists' Union (funds) - \$1,800

T&E, Inc. (funds) - \$4,900

CH2MHill (funds) - \$42,500

University of Arizona (grad student fellowships, field vehicles, funds) – \$162,138

New Mexico State University (field work to collect samples) - \$9,000

University of Alberta (field work to collect samples) - \$1,500

Canadian Wildlife Service (field work to collect samples) - \$7,500

39 DoD installations in 9 western states have provided time, access, permits, and field assistance: Barry M. Goldwater Air Force Range, Boardman Bombing Range, Buckley AFB, Camp Guernsey, Camp Pendleton, Canon AFB, China Lake Naval Weapons Station, Davis-Monthan AFB, Dixon Navy Radio Transmitter Facility, Dugway Proving Ground, Edwards AFB, El Centro NAF, Fallbrook Naval Weapons Station, FE Warren AFB, Fort Bliss AFB, Fort Carson, Fort Irwin, Ft Bliss, Hill AFB, Holloman AFB, Kirtland AFB, Lovell Training Area, March JARB, MCLB Barstow, Mountain Home AFB, NAS Lemoore, Naval Base Coronado, Nellis AFB, Orchard Training Range, Pinon Canyon Maneuver Site, Pueblo Chemical Depot, Schriever AFB, Seal Beach Naval Weapons Station, Sharpe Depot in Lathrop, Sheridan Training Area, Travis AFB, White Sands Missile Range, Yuma Marine Corps Air Station, and Yuma Proving Ground.

Collaborators/Partners in Mexico

National Council of Science and Technology in Mexico (funds) - \$106,540

Universidad Autonoma de Nuevo Leon (field work to collect samples)

Colegio de Posgraduados (field work to collect samples)
Universidad Autonoma de Baja California Sur (field work to collect samples)
Universidad Autonoma de Nuevo Leon ornithology lab (4 collaborators for field surveys)
Colegio de Post-graduados Campus Texcoco (2 collaborators for field surveys)
Procuraduría Estatal de Protección al Ambiente de Aguascalientes (2 government employees for field surveys)
Centro de Ecología Regional, A.C (8 collaborators for field surveys)
Faunotica A.C. (4 collaborators for field surveys)
Pronatura A.C. (1 collaborator for field surveys)
Tierra de Aves A.C. (1 collaborator for field surveys)
Museo Comunitario de la Fauna de Veracruz (1 collaborator for field surveys)
Pronatura Noreste A.C. (1 collaborator for field surveys)
Veracruz Falconry Club (1 collaborator for field surveys)
Jalisco Falconry Club (1 collaborator for field surveys)
Toluca Falconry Club (1 collaborator for field surveys)