

Aaron David Flesch

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EDUCATION

Ph. D., Program in Organismal Biology and Ecology, 2008 – Present, Division of Biological Sciences, University of Montana, Missoula, MT. Advisor: Richard L. Hutto.

M. S., Wildlife Science – 2003, School of Natural Resources, University of Arizona, Tucson, AZ.
Advisor: Robert J. Steidl

B. A., Environmental Studies – 1995, Prescott College, Prescott, AZ. Advisor: Walt Anderson

POSITIONS

Graduate Research and Teaching Assistant, Division of Biological Sciences, University of Montana, Missoula, MT (2008 – Present)

- Teaching Assistant for Ecology, Ornithology, and Rocky Mountain Flora.
- Dissertation proposal title: Local vs. landscape drivers of animal distribution patterns.

Senior Research Specialist, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ (2003 – Present)

- Managing all aspects of multifaceted research program.

Graduate Research Assistant, School of Natural Resources, University of Arizona, Tucson, AZ. (2000 – 2003)

- Thesis title: Distribution, abundance, and habitat of ferruginous pygmy-owls in Sonora, Mexico.

Biological Science Technician, U.S. Fish and Wildlife Service, Alaska Region, Southeast AK (Summer 2000)

- Bird surveys, vegetation measurements, and backcountry river navigation.

Biological Consultant, Recon Environmental, Inc., Tucson, AZ (2006 – 2007)

- Designed ecological monitoring program for Pima County AZ.

Biological Consultant, A. D. Flesch and Associates, Tucson, AZ (1997 – 2000)

- Implemented research and monitoring programs mainly for public natural resource agencies.

Biological Science Technician, U.S. Geological Survey, Ft. Collins, CO (winter 1999)

- Supervised field crew surveying wintering grassland birds in southeast AZ.

Biological Consultant, SWCA Environmental, Harris Environmental, Dames & Moore, Tucson, AZ (1996 – 1999)

- Surveys, Clean Water Act permitting, and biological evaluations.

Nongame Biologist, Arizona Game and Fish Department, Phoenix, AZ (1997 – 1998)

- Arizona Breeding Bird Atlas Program.

PUBLICATIONS

Refereed Articles:

- Flesch, A. D., and R. J. Steidl. 2010. Importance of environmental and spatial gradients on patterns and consequences of resource selection. *Ecological Applications* 20: in press.
- Flesch, A. D., D. E. Swann, D. S. Turner, and B. F. Powell. 2010. Herpetofauna of the Rincon Mountains, Arizona. *Southwestern Naturalist* 55: in press.
- Flesch, A. D., C. W. Epps, J. W. Cain, M. Clark, P. R. Krausman, and J. R. Morgart. 2010. Potential effects of the United States-Mexico border fence on wildlife. *Conservation Biology* 24:171-181.
- Flesch, A. D. 2008. Distribution and status of breeding landbirds in northern Sonora, Mexico. *Studies in Avian Biology* 37:28-45. (invited)
- Flesch, A. D., and R. J. Steidl. 2007. Detectability and response rates of ferruginous pygmy-owls. *Journal of Wildlife Management* 71:981-990.
- Flesch, A. D., and R. J. Steidl. 2006. Population trends and implications for monitoring cactus ferruginous pygmy-owls in northern Mexico. *Journal of Wildlife Management* 70:867-871.
- Flesch, A. D. 2003. Perch-site selection and spatial use by cactus ferruginous pygmy-owls in south-central Arizona. *Journal of Raptor Research* 37:151-157.

Book Chapters:

- Villaseñor-Gómez, J. F., O. Hinojosa-Huerta, E. Gómez-Limón, D. Krueper, and A. D. Flesch. 2010. Avifauna. Pages 385-420 in F. E. Molina-Freaner and T. R. Van Devender (editors), *The Biological Diversity of Sonora Mexico*. Universidad Nacional Autónoma de Mexico, Mexico City, Mexico (In Spanish).

Non-refereed Articles:

- Flesch, A. D. 2010. Research and recovery of ferruginous pygmy-owls in the Sonoran Desert. *Vermillion Flycatcher* 55(2):14-15.
- Flesch, A. D. 2010. Nest-site selection by ferruginous pygmy-owls in the Sonoran Desert. *Bulletin of the Ecological Society of America* 91(3): in press.
- Flesch, A. D., and L. E. Hahn. 2005. Distribution of birds and plants at the western and southern edges of the Madrean Sky Island region in Sonora, Mexico. Pages 80-87 in Gottfried G. J. et al. (editors), *Connecting mountain islands and desert seas: biodiversity and management of the Madrean Archipelago II*, RMRS-P-36. U.S. Department of Agriculture, Forest Service.

REPORTS

- Flesch, A. D. 2009. Landbird monitoring in the Sonoran Desert Network: Status report 2008. Natural Resource Technical Report NPS/XXXN/NRTR-2009/OXX. National Park Service, Fort Collins, CO.
- Flesch, A. D. 2009. Breeding, migratory, and wintering birds of the Northern Jaguar Reserve east-central Sonora, Mexico. Report to Northern Jaguar Project and Naturalia A.C.
- Flesch, A. D. 2008. Distribution and status of birds of conservation interest and identification of important bird areas in Sonora Mexico. U.S. Fish and Wildlife Service, Sonoran Joint Venture, Tucson, AZ. Cooperative

Agreement No. 201816J827.

- Flesch, A. D. 2008. Population and community dynamics of lizards and rodents in Organ Pipe Cactus National Monument 1989-2006 and implications for future monitoring. Report to Organ Pipe Cactus National Monument and Desert Southwest Cooperative Ecosystems Studies Unit, NPS Cooperative Agreement No. H1200050003.
- Flesch, A. D. 2008. Population and demographic trends of ferruginous pygmy-owls in northern Sonora Mexico 2000-2008. Progress report to program sponsors.
- Flesch, A. D. 2008. Migratory and resident birds of the Northern Jaguar Reserve of east-central Sonora, Mexico. Report to Northern Jaguar Project and Naturalia A.C.
- Flesch, A. D. 2008. Status and population size of breeding grassland birds on Rancho Los Fresnos, northern Sonora, Mexico. Report to Biodiversidad y Desarrollo Armónica A.C.
- Flesch, A. D. 2008. Population and demographic trends of ferruginous pygmy-owls in northern Sonora Mexico 2000-2007 and implications for recovery in Arizona. Progress report to program sponsors.
- Flesch, A. D. and R. J. Steidl. 2007. Association between roadways and cactus ferruginous pygmy-owls in northern Sonora Mexico. Report to Arizona Department of Transportation, A.G. Contract No. KR02-1957TRN, JPA 02-156.
- Powell, B. F., L. Woods, and A. D. Flesch. 2007. Draft effectiveness monitoring plan for Pima County: Phase I. Report to Pima County by Recon Environmental Inc., RECON No. 4115B/3272B.
- Flesch, A. D. 2007. Population and demographic trends of ferruginous pygmy-owls in northern Sonora Mexico and implications for recovery in Arizona. Report to Defenders of Wildlife, Tucson Audubon Society, Rincon Chapter of the Sierra Club, and Center for Biological Diversity.
- Powell, B. F., A. D. Flesch, D. Angell, K. Beaupre, and W. L. Halvorson. 2007. Landbird monitoring protocol for the Sonoran Desert Network. Version 1.02. Natural Resource Report NPS/SODN/NRTR-2007/00X. National Park Service, Fort Collins, CO.
- O'Brien, C, A. D. Flesch, E. Wallace, M. Bogan, S. E. Carrillo-Percástegui, S. Jacobs, and C. van Riper III. 2006. Biological Inventory of the Rio Aros, Sonora, Mexico. School of Natural Resources and U.S. Geological Survey, Southwest Biological Science Center, Sonoran Desert Research Station.
- Flesch, A. D, D. E. Swann, and B. F. Powell. 2006. Chapter 4: Amphibian and reptile inventory. Pages 26-42 in B. F. Powell, W. L. Halvorson, and C. A. Schmidt, editors. Vascular plant and vertebrate inventory of Saguaro National Park, Rincon Mountain District, Open File Report 2006-1075. U.S. Geological Survey, Southwest Biological Science Center, Sonoran Desert Research Station, University of Arizona, Tucson, AZ.
- Flesch, A. D. and R. J. Steidl. 2006. Population trends of ferruginous pygmy-owls in northern Mexico and implications for Tumacácori and other Arizona National Park Units. Report to Desert Southwest Cooperative Ecosystems Studies Unit and Tumacácori National Historic Park.
- Flesch, A. D. and R. J. Steidl. 2005. Trends and productivity of cactus ferruginous pygmy-owls in northern Sonora, Mexico: Implications for Organ Pipe Cactus National Monument. Report to Desert Southwest Cooperative Ecosystems Studies Unit, Intermountain Region International Conservation Programs Office, and Organ Pipe Cactus National Monument.

- Flesch, A. D. and R. J. Steidl. 2002. Nest-site selection by cactus ferruginous pygmy-owls in northern Sonora Mexico. Report to U.S. Fish and Wildlife Service, Sonoran Joint Venture, Tucson, AZ. Cooperative Agreement No.1448-20181-01-J862.
- Flesch, A. D. and R. J. Steidl. 2001. Cactus ferruginous pygmy-owl and nongame bird surveys on the Cabeza Prieta National Wildlife Refuge, 2001. Report to U.S. Fish and Wildlife Service Cabeza Prieta National Wildlife Refuge, Ajo, AZ. Cooperative Agreement No. 1448-20181-00-G918.
- Flesch, A. D. 1999. Cactus ferruginous pygmy-owl surveys and nest monitoring on and around the Buenos Aires National Wildlife Refuge, Altar Valley, Arizona. Report to U.S. Fish and Wildlife Service, Buenos Aires National Wildlife Refuge, Sasabe, AZ. Cooperative Agreement No. 1448-00002-99-G943.
- Flesch, A. D. 1999. Grassland bird community monitoring on the Buenos Aires National Wildlife Refuge 1998. Report to U.S. Fish and Wildlife Service, Buenos Aires National Wildlife Refuge, Sasabe, AZ.
- Flesch, A. D. 1998. Avian community monitoring along Arivaca Creek, Buenos Aires National Wildlife Refuge, 1998. Report to U.S. Fish and Wildlife Service, Buenos Aires National Wildlife Refuge, Sasabe, AZ. Reference No. R2-8-0854, Order No. 201818M147.
- Flesch, A. D. 1998. Cactus ferruginous pygmy-owl surveys on the San Bernardino National Wildlife Refuge 1998. Report to U.S. Fish and Wildlife Service, San Bernardino National Wildlife Refuge, Douglas, AZ.
- Flesch, A. D. 1997. Distribution and abundance of grassland birds on the Buenos Aires National Wildlife Refuge: A monitoring program. Report to U.S. Fish and Wildlife Service, Buenos Aires National Wildlife Refuge, Sasabe, AZ.

PRESENTATIONS

Conference Papers:

- Flesch, A. D., and M. Clark. 2009. Potential effects of the U.S-Mexico border fence on ferruginous pygmy-owls and implications for other species. Carnivores 2009: Carnivore Conservation in a Changing World, Defenders of Wildlife National Conference, Denver, CO.
- Hinojosa-Huerta, O., J. F. Villaseñor-Gómez, D. Krueper, E. Gómez-Limón, and A. D. Flesch. 2008. The birds of Sonora, Mexico: a review and update. Western Field Ornithologists annual meeting, San Mateo, CA.
- Flesch, A. D., and R. J. Steidl. 2007. Population and demographic trends of ferruginous pygmy-owls in northern Mexico and implications for recovery in Arizona. The Wildlife Society annual meeting, Tucson, AZ.
- Flesch, A. D. 2006. Distribution and abundance of birds of conservation interest in the borderlands of Sonora Mexico. Fourth North American Ornithological Conference, Borderlands Symposium, Veracruz, Mexico.
- Flesch, A. D., and R. J. Steidl. 2005. Nest selection by cactus ferruginous pygmy-owls in Sonora, Mexico and implications for management and recovery. Arizona-New Mexico Chapter of The Wildlife Society annual meeting, Gallup, NM.
- Flesch, A. D., and L. E. Hahn. 2004. Distribution of birds and plants and the western and southern edges of the Madrean Sky Island region in Sonora, Mexico. Biodiversity and Management of the Madrean Archipelago II, Tucson, AZ.
- Flesch, A. D., and R. J. Steidl. 2002. Distribution, abundance, and habitat of cactus ferruginous pygmy-owls

in Sonora, Mexico. The Wildlife Society annual meeting, Bismarck, ND.

- Flesch, A. D., R. J. Steidl, E. Lopez Saavedra, and G. Valencia Ortega. 2002. Distribution and relative abundance of cactus ferruginous pygmy-owls in Sonora, Mexico. Arizona-New Mexico Chapter of The Wildlife Society annual meeting, Safford, AZ. (Best Student Paper).

Invited Lectures and Seminars:

- Flesch, A. D. 2010. Distance sampling: concept and application. Guest lecture and computer lab in Field techniques for avian biology, Division of Biological Sciences, University of Montana, Missoula, MT.
- Flesch, A. D. 2010. Local vs. landscape drivers of animal distribution patterns. Organismal Biology and Ecology Program Seminar Series, Division of Biological Sciences, University of Montana, Missoula, MT.
- Flesch, A. D. 2010. Population and community dynamics of lizards and rodents in Organ Pipe Cactus National Monument 1989-2006 and implications for monitoring. U.S. National Park Service and U.S. Geological Survey, Tucson, AZ.
- Flesch, A. D. 2010. Status, natural history, and recovery of ferruginous pygmy-owls in the Sonoran Desert. Living with Nature Lecture Series, Tucson Audubon Society, Tucson, AZ.
- Flesch, A. D. 2008. Linking monitoring and management: concept and application for wildlife. Guest lecture in Wildlife Management, Prescott College, Prescott, AZ.
- Flesch, A. D. 2008. Physiography, vegetation, and avifauna of Sonora Mexico. Guest lecture in Human Dimensions of Natural Resource Conservation, School of Natural Resources, University of Arizona, Tucson, AZ.
- Flesch, A. D. 2007. Concept and application for monitoring and managing landbirds in the San Pedro River Valley of Sonora Mexico. Presentation to Biodiversidad y Desarrollo Armónica and Comisión Nacional de Áreas Naturales Protegidas, Rancho Los Fresnos, Sonora, Mexico.
- Flesch, A. D. 2007. Identification and habitat of birds in the San Pedro River Valley in Sonora Mexico. Presentation to Biodiversidad y Desarrollo Armónica and Comisión Nacional de Áreas Naturales Protegidas, Rancho Los Fresnos, Sonora, Mexico. (In Spanish).
- Flesch, A. D., and B. F. Powell. 2006. Potential monitoring parameters for the Pima County Ecological Monitoring Program: Assumptions and survey design. Presentation to vertebrate experts assembled by Pima County, Tucson, AZ.
- Flesch, A. D., and B. F. Powell. 2006. Adaptive management: concept and application. Presentation to natural resource managers assembled by Pima County, Tucson, AZ.
- Flesch, A. D. 2006. Patterns and consequences of nest-site selection by ferruginous pygmy-owls and application to management using nest boxes. Presentation to USFWS Ecological Services Field Office, Buenos Aires National Wildlife Refuge, and Arizona Game and Fish Department, Sasabe, AZ.
- Flesch, A. D., C. O'Brien, and J. E. Wallace. 2006. A river unknown: Flora and fauna of the Rio Aros Valley. Presentation to the Arizona Native Plant Society, Tucson, AZ.
- Flesch, A. D. 2003. Distribution, habitat, and management of cactus ferruginous pygmy-owls in the Altar Valley and beyond. Presentation to Altar Valley Conservation Alliance and USFWS, Robles Junction, AZ.

GRANTS AND AWARDS

- Habitat quality and status of ferruginous pygmy-owls in northern Sonora Mexico. 2009-2012. Tucson Audubon Society and Defenders of Wildlife, \$13,000.
- Migratory and resident birds of the Northern Jaguar Reserve of Sonora Mexico. 2009-2010. Northern Jaguar Project and U.S. Fish and Wildlife Service, Division of Bird Habitat Conservation, \$14,450.
- Bertha Morton Graduate Scholarship. 2009-2010. University of Montana, Graduate College, \$2,000
- Status, distribution, and biogeography of birds in the Sky Islands of northern Sonora Mexico. 2009-2012. Sky Island Alliance and Veolia Environment Foundation, \$33,500.
- Population trends of ferruginous pygmy-owls in northern Sonora Mexico. 2009. Center for Biological Diversity and Global Owl Project, \$2,000.
- Status, distribution, and biogeography of birds in the Sky Islands of northern Sonora Mexico. 2008-2013. Rocky Mountain and Desert Southwest Cooperative Ecosystem Studies Units and Intermountain Region International Conservation Programs Office, National Park Service, \$102,890 (with R.L. Hutto).
- Population and demographic trends of ferruginous pygmy-owls in northern Sonora, Mexico and implications for Organ Pipe Cactus National Monument. 2008-2009. Desert Southwest Cooperative Ecosystem Studies Unit and Organ Pipe Cactus National Monument, National Park Service, \$20,000.
- Migratory and resident birds of the Northern Jaguar Reserve of Sonora Mexico. 2008. Northern Jaguar Project and U.S. Fish and Wildlife Service, Division of Bird Habitat Conservation, \$11,200.
- Population trends of ferruginous pygmy-owls in northern Sonora Mexico. 2008. Global Owl Project, Arizona Zoological Society, and Rincon Chapter of the Sierra Club, \$5,250.
- Implementation of bird monitoring for the Sonoran Desert Network of National Parks. 2008. National Park Service Inventory and Monitoring Program - Sonoran Desert Network, \$34,566.
- Population trends of rodents and lizards at Organ Pipe Cactus NM 1989-2006 and implications for future efforts. 2008. National Park Service Inventory and Monitoring Program - Sonoran Desert Network and Organ Pipe Cactus National Monument, \$11,600.
- Analysis of monitoring data for rodents and lizards at Organ Pipe National Monument and implications for future efforts. 2007. Desert Southwest Cooperative Ecosystem Studies Unit, National Park Service, \$14,800 (with B.F. Powell and R.J. Steidl).
- Implications of transboundary development on movements and conservation of wildlife in the United States-Mexico borderlands. 2007. Defenders of Wildlife, \$4,000.
- Status and population size of breeding grassland birds on Rancho Los Fresnos in the Upper San Pedro River Valley. 2007. Biodiversidad y Desarrollo Armónica, \$2,275.
- Migratory and resident birds of the Northern Jaguar Reserve of Sonora Mexico. 2007. Northern Jaguar Project and U.S. Fish and Wildlife Service, Division of Bird Habitat Conservation, \$4,385.
- Workshop on monitoring and identification of birds in the San Pedro River Valley and Rancho Los Fresnos in Sonora Mexico. 2007. Biodiversidad y Desarrollo Armónica, \$500.

- Population and demographic trends of ferruginous pygmy-owls in northern Sonora Mexico and implications for recovery in Arizona. 2006. Defenders of Wildlife. T&E, Inc., and Center for Biological Diversity, \$8,500.
- Distribution and abundance of birds of conservation interest and identification of important bird areas in Sonora Mexico. 2006-2008. U.S. Fish and Wildlife Service - Sonoran Joint Venture and T&E, Inc., \$9,250.
- Population and demographic trends of ferruginous pygmy-owls in northern Sonora Mexico and implications for recovery in Arizona. 2006. Defenders of Wildlife, Tucson Audubon Society, Rincon Chapter of the Sierra Club, and Center for Biological Diversity, \$10,000.
- Population trends of ferruginous pygmy-owls in northern Mexico and implications for management in Tumacácori National Historical Park and other Arizona National Park Units. 2005. Desert Southwest Cooperative Ecosystem Studies Unit, National Park Service, \$7,250 (with R.J. Steidl).
- Population and productivity trends of cactus ferruginous pygmy-owls in northern Sonora Mexico. 2005. T&E, Inc., \$2,500 (with R.J. Steidl).
- Trends and productivity of cactus ferruginous pygmy-owls in northern Sonora, Mexico: implications for Organ Pipe Cactus National Monument. 2004. Desert Southwest Cooperative Ecosystem Studies Unit and Intermountain Region International Conservation Programs Office, National Park Service, \$10,000 (with R.J. Steidl).
- Population trends of cactus ferruginous pygmy-owls in northern Sonora Mexico and implications for recovery in Arizona. 2004. T&E, Inc., \$2,500 (with R.J. Steidl).
- Association between roadways and cactus ferruginous pygmy-owls in northern Sonora, Mexico. 2003. Arizona Department of Transportation, \$279,271 (with R.J. Steidl).
- Nesting habitat of cactus ferruginous pygmy-owls in the Sonoran Desert. 2001. U.S. Fish and Wildlife Service, Sonoran Joint Venture, \$7,500 (with R.J. Steidl).
- Nesting habitat and surveys for cactus ferruginous pygmy-owls in the Sonoran Desert. 2001. U.S. Fish and Wildlife Service, \$8,000 (with R.J. Steidl).
- Survey of breeding and migratory birds on Cabeza Prieta National Wildlife Refuge. 2000. U.S. Fish and Wildlife Service, \$8,000 (with R.J. Steidl).
- Distribution, relative abundance, and habitat of cactus ferruginous pygmy-owls in Sonora, Mexico. 2000. U.S. Fish and Wildlife Service, \$141,302.
- Grassland bird monitoring on the Buenos Aires National Wildlife Refuge. 1999. U.S. Fish and Wildlife Service, Buenos Aires NWR, \$1,885.
- Gray hawk surveys and nest monitoring and yellow-billed cuckoo surveys in the Altar Valley. 1999. U.S. Fish and Wildlife Service, Buenos Aires NWR, \$2,960.
- Surveys, nest searching and monitoring, and habitat use of cactus ferruginous pygmy-owls in the Altar Valley. 1999. U.S. Fish and Wildlife Service, Region II and Buenos Aires NWR, \$25,114.
- Cactus ferruginous pygmy-owl surveys on the San Bernardino National Wildlife Refuge. 1998. U.S. Fish and Wildlife Service, San Bernardino NWR, \$500.
- Arivaca Creek and Arivaca Cienega avian monitoring program for the Buenos Aires National Wildlife Refuge. 1998. U.S. Fish and Wildlife Service, Buenos Aires NWR, \$3,945.

- Grassland bird monitoring on the Buenos Aires National Wildlife Refuge. 1998. U.S. Fish and Wildlife Service, Buenos Aires NWR, \$2,870.
- Distribution and abundance of grassland birds on the Buenos Aires National Wildlife Refuge: A monitoring program. 1997. U.S. Fish and Wildlife Service, Buenos Aires NWR, \$2,267.
- Vegetation communities of the Theodore Roosevelt Memorial Bird Sanctuary: a quantitative description. 1996. National Audubon Society, \$976.
- Marlin Perkins Scholarship. 1995. Mutual of Omaha Wildlife Heritage Center, \$1,000.

SERVICE

- Sonoran Desert Conservation Plan, contributor, <http://www.pima.gov/cmo/sdcp/contribute.html>.
- Reviewer for Journal of Wildlife Management, Journal of Raptor Research, Ornitologia Neotropical.
- Science Advisory Network - Sky Island Alliance.
- Comisión Nacional de Áreas Naturales Protegidas, volunteer.
- Students Integrating Academics & Conservation, member <http://eeb19.biosci.arizona.edu/siac/index.html>.
- Interpretive naturalist and field trip leader for Tucson Audubon Society 1997-2001.
- Border Ecological Symposium, invited participant, Wildlands Project and Defenders of Wildlife.

PRESS (sample)

- American Scientist. Science observer - don't fence me out, Anna Lena Phillips. November-December 2009.
- The Wildlife Professional. Science in short – border fence impacts, The Wildlife Society. Fall 2009.
- Birding Magazine. News and notes - birds of northern Sonora, Paul Hess. July 2009.
- Discovery News. U.S.-Mexico border fence may snag wildlife, Jessica Marshall. July 2009.
- Los Angeles Times. U.S.-Mexico border fence isolates wildlife, Amy Littlefield. July 2009.
- Science Daily. U.S.-Mexico border wall could threaten wildlife species. July 2009.
- Audubon Magazine. The borderlands - border jumpers. Judy Leibach September - October 2007.