## BRIAN D. LINKHART, Professor

Department of Organismal Biology and Ecology

14 East Cache La Poudre St.

COLORADO COLLEGE

Colorado Springs, CO 80903

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### EDUCATION

2001 **Ph.D**.; Department of Ecology and Evolutionary Biology, University of Colorado, Boulder, CO

*Dissertation*: Life history characteristics and habitat quality of Flammulated Owls

1984 **M.S.**; Department of Fishery & Wildlife Biology, Colorado State University, Fort Collins, CO

*Thesis*: Range, activity, and habitat use by nesting Flammulated Owls in Colorado

1981 **B.S.;** Department of Fishery & Wildlife Biology, Colorado State University, Fort Collins, CO. Minor: Botany

# TEACHING EXPERIENCE

2001- **Department of Organismal Biology and Ecology, Colorado College**

## *Professor 2016 – present*

## *Associate Professor* 2006 – 2016

## *Assistant Professor* 2001 – 2006

**Courses**:

BE106 Biology of Animals

BY109 Biology of Vertebrates

BY203/SW303 Field Zoology

BE208/SW208 Ecology

BE309/409 Research Problems in Organismal Biology and Ecology

BE367/SW303 Animal Ecology

BY369/370 Tropical Forest and Coral Reef Ecology

BE389/390 Ecology and Biogeography of Patagonia

BE410/SW410 Ornithology

BE499 Senior Thesis

## 1986-2001 Cloud Ridge Naturalists, Ward, CO

*Instructor*: Field seminars on faunal ecology in ponderosa pine forests

## 1999-2000 Department of Biology, Colorado College

*Visiting Professor*: Courses taught—Ornithology

## 1987-2001 Littleton High School, Science Department, Littleton, CO

*Teacher*: International Baccalaureate (IB) HL Biology; Zoology; Botany; Earth Science; Integrated Science; Experimental Science

*Head coach*: Varsity boys & girls track & field

**RESEARCH EXPERIENCE**

1997-2001 **Rocky Mountain Research Station, U.S. Forest Service**, Ft. Collins, CO

*Wildlife Biologist*: Designed/conducted investigations of demographic performance and habitat quality of Flammulated Owls.

1985-1986 **Colorado Division of Wildlife,** Fort Collins, CO

*Wildlife Technician*: Conducted investigation of nesting ecology of Greater Prairie Chickens and Merriam’s Wild Turkey in Colorado and New Mexico.

## 1982-1984 Colorado State University, Fort Collins, CO

*Research Assistant*: Designed/conducted radiotelemetry studies of home range size and habitat use by nesting Flammulated Owls.

1980-1981 **Rocky Mountain Research Station, U.S. Forest Service**, Ft. Collins, CO

*Wildlife Technician*: Assisted in investigations of nesting ecology and habitat associations of forest raptors.

#### EXTERNALLY FUNDED GRANTS

2015-2025 USDA Forest Service, Rio Grande National Forest--$296,000 (Cost-share Agreement). Assessing Influences of Prescribed Fire Within the Hot Creek RNA on the Demography, Movement Patterns, and Habitat Use of Flammulated Owls.

P. I.: B. Linkhart

2014 Macaleer Foundation--$35,000. Connectivity of Stopover Habitats and Wintering Areas Among Populations of Flammulated Owls in the Western U.S. P. I.: B. Linkhart

2012 Macaleer Foundation--$15,000. Migration Timing and Routes, and Wintering Areas of Flammulated Owls. P. I.: B. Linkhart

2008-2012 USDI Fish and Wildlife Service, Migratory Birds--$48,000. The Effects of Landscape-scale Disturbances on Demography and Habitat Use of Flammulated Owls. P.I.: B. Linkhart

2010 USDI Fish and Wildlife Service, Migratory Birds--$3,000. Migration Timing and Routes, and Wintering Areas of Flammulated Owls. P. I.: B. Linkhart

2007 USDA Forest Service--$15,000. The Effects of the Hayman Fire on Demography and Habitat Use of Flammulated Owls. P.I.: B. Linkhart

2006 USDA Forest Service--$12,500. The Effects of the Hayman Fire on Demography and Habitat Use of Flammulated Owls. P.I.: B. Linkhart

2004 USDA Forest Service--$8,000. The Effects of the Hayman Fire on Demography and Habitat Use of Flammulated Owls. P.I.: B. Linkhart

2004 Denver Audubon Society--$2,500. Reproductive Strategies of Flammulated Owls.

2003 USDA Forest Service--$7,000. The Effects of the Hayman Fire on Demography and Habitat Use of Flammulated Owls. P.I.: B. Linkhart

1999 Colorado Mountain Club Foundation--$2,000. Habitat Quality of Flammulated Owls. P.I.: B. Linkhart

1998-1999 Colorado Natural History Small Grant Award--$5,000. Habitat Quality and Demography of Flammulated Owls. P.I.: B. Linkhart

1984 USDA Rocky Mountain Research Station--$15,000. Home Range Characteristics and Habitat Use by Flammulated Owls. P.I.: B. Linkhart

#### INTERNALLY FUNDED GRANTS

2001-2020 Natural Science Division Research and Development Grant

2003-2020 Southwest Studies Jackson Fellowship

2009-2013 Lyddon Foundation

2014, 2010 Dean’s Faculty-Student Collaborative Research Grant

2002-2004 Hughes Undergraduate Research Grant

**PUBLICATIONS** (\* denotes student authors)

\*Ciaglo, M., \*R. Calhoun, \*S. W. Yanco, M. B. Wunder, C. A. Stricker, and B. D. Linkhart. 2020. Evidence of post-breeding prospecting in a long-distance migrant. *Ecology and Evolution* XX:1-13. <https://doi.org/10.1002/ece3.7085>

\*Herzog, J. L., \*J. M. Eisaguirre, B. D. Linkhart, and T. L. Booms. 2019. Golden Eagle diet in western Alaska. Journal of Raptor Research 53:393-401.

\*Yanco, S. W., and B. D. Linkhart. 2018. Changing fire regimes and faunal responses: Habitat use by Flammulated Owls after fire in Colorado, *in* Trends and traditions: Avifaunal change in western North America (W.D. Shuford, R. E. Gill Jr., and C. M. Handel, eds.), pp. 419-431. Studies of Western Birds 3. Western Field Ornithologists, Camarillo, CA; doi 10.21199/SWB3.22.

Linkhart, B. D, \*S.W. Yanco, and J. Fox. 2016. Migration timing and routes, and wintering areas of Flammulated Owls. *Journal of Field Ornithology* 87:42-54.

Linkhart, B. D., and A. McCallum. 2013. Flammulated Owl (*Psiloscops flammeolus*). *In* The Birds of North America, no. 93 (A. Poole and F. Gill, Eds.). Academy of Natural Sciences, Philadelphia, and American Ornithologists’ Union, Washington, D.C. (2nd Edition)

Nelson, M.D., Johnson, D.H., Linkhart, B.D. and Miles, P.D. 2009. Flammulated owl (*Otus flammeolus*) breeding habitat abundance in ponderosa pine forests of the United States. *In*: Rich, T.D., Arizmendi, C., Demarest, D. and Thompson, C. (eds.), Tundra to Tropics: Connecting Birds, Habitats and People. *Fourth International Partners in Flight Symposium* 4:71-81.

Linkhart, B. D., E. R. Evers\*, J. D. Megler\*, E. C. Palm\*, C. M. Salipante\*, and S. W. Yanco\*. 2008. Polygyny in the Flammulated Owl. *Wilson Journal of Ornithology* 120:645-648.

Linkhart, B. D., and R. T. Reynolds. 2007. Rate of return, fidelity, and dispersal in a breeding population of Flammulated Owls. *Auk* 124:264-275.

Linkhart, B. D., and R. T. Reynolds. 2006. Lifetime reproduction of Flammulated Owls in Colorado. *Journal of Raptor Research* 40:29-37.

Linkhart, B. D., and R. T. Reynolds. 2004. Longevity of Flammulated Owls: Additional records and comparisons to other North American strigiforms. *Journal of Field Ornithology* 75:192-195.

Linkhart, B. D., R. T. Reynolds and R. A. Ryder. 1998. Home range and habitat of breeding Flammulated Owls in Colorado. *Wilson Bulletin* 110:342-351.

Reynolds, R. T., and B. D. Linkhart. 1998. Flammulated Owl. Pages 140-144 *in* R. L. Glinski (Ed.). Raptors of Arizona. Univ. of Arizona Press. Tucson, AZ.

Linkhart, B. D., and R. T. Reynolds. 1997. Territories of Flammulated Owls: Is occupancy a measure of habitat quality? Pages 250-254 in J. R. Duncan, D. H. Johnson, and T. H. Nicholls, eds. Biology and Conservation of Owls of the Northern Hemisphere. Winnipeg, Manitoba. USDA Forest Service Gen Tech. Rep. NC-190.

Linkhart, B. D., and R. T. Reynolds. 1994. *Peromyscus* carcass in the nest of a Flammulated Owl. *Journal of Raptor Research* 28:43-44.

Reynolds, R. T., and B. D. Linkhart. 1992. Flammulated Owls in ponderosa pine: evidence of preference for old-growth. Pages 166-169 *in* M. R. Kaufmann, W. H. Moir, and R. L. Bassett, Tech. Coord. Old-growth forests in the Southwest and Rocky Mountain Regions: Proceedings of a workshop. USDA Forest Service Gen. Tech. Rep. RM-213.

Reynolds, R. T., R. A. Ryder, and B. D. Linkhart. 1992. Small forest owls. Pages 134-140 *in* B. Pendleton, K. Steenhof, and M. N. Kochert, eds. Western Raptor Management Symposium and Workshop Proceedings. Natl. Wild. Fed. Sci. and Tech. Serv. No. 12.

Reynolds, R. T., and B. D. Linkhart. 1990. Extra-pair copulation and extra-range movements in Flammulated Owls. *Ornis Scandinavica* 21:74-77.

Reynolds, R. T., and B. D. Linkhart. 1990. Longevity records for male and female Flammulated Owls. *Journal of Field Ornithology* 61:243-244.

Reynolds, R. T., and B. D. Linkhart. 1987. Fidelity to territory and mate in Flammulated Owls. Pages 234-238 *in* R. W. Nero, R. J. Clark, R. J. Knapton, and R. H. Hamre, eds. Biology and conservation of northern forest owls. USDA Forest Service Gen. Tech. Rep. RM-142.

Reynolds, R. T., and B. D. Linkhart. 1987. The nesting biology of Flammulated Owls in Colorado. Pp 239-248 *in* R. W. Nero, R. J. Clark, R. J. Knapton, and R. H. Hamre, eds. Biology and conservation of northern forest owls. USDA Forest Service Gen. Tech. Rep. RM-142.

Linkhart, B. D., and R. T. Reynolds. 1987. Brood division and postnesting behavior of Flammulated Owls. *Wilson Bulletin* 99:240-243.

Reynolds, R. T., B. D. Linkhart, and J. Jeanson. 1985. Characteristics of snags and trees containing cavities in a Colorado conifer forest. USDA Forest Service Res. Note. RM-455. 6 pp

Reynolds, R. T., and B. D. Linkhart. 1984. Methods and materials for capturing and monitoring Flammulated Owls. *Great Basin Naturalist* 44:49-51.

## MANUSCRIPTS IN PREPARATION (\* student authors)

\*Yanco, S. W., B. D. Linkhart, P. P. Marra, and M. B. Wunder. Niche dynamics and ecological drivers of migration in an insectivorous owl. *Ecology Letters* (intended outlet).

Linkhart, B. D. Climate correlates of long-term changes in phenology and demography in Flammulated Owls. *Global Change Biology* (intended outlet).

Linkhart, B. D., S. W. Yanco\*. Nesting habitat of Flammulated Owls: Vegetation structure mediates predation pressure. *The Auk: Ornithological Advances* (intended outlet).

Linkhart, B. D. Long-term Demography of Flammulated Owls. *The Auk: Ornithological Advances* (intended outlet).

Linkhart, B. D., E. Wick, and J. Hawkins. Unregulated tributaries as refugia for native fish populations in the upper Colorado River Basin. *American* *Fisheries* (intended outlet).

\*Griscom, B. and B. D. Linkhart. Prevalence of hemoparasites and effects on body condition in a breeding population of Flammulated Owls. *Journal of Parasitology* (intended outlet).

Linkhart, B. D, J. Salgado-Ortiz, and G. Bowen. Morphometry, migratory status, and habitat of Flammulated Owls in Mexico. *Biotropica* (intended outlet).

Linkhart, B. D. Selection of foraging and singing habitat in Flammulated Owls: the influence of forest floristics and structure. *Wilson Journal of Ornithology* (intended outlet).

Linkhart, B. D., R. T. Reynolds, and G. C. White. Effects of radio-transmitters and data loggers on survival and reproductive success in Flammulated Owls. *Journal of Raptor Research* (intended outlet).

## PRESENTATIONS—CONFERENCES (\* student authors)

\*Yanco, S. W., B. D. Linkhart, P. P. Marra, and M. B. Wunder. Niche dynamics and ecological drivers of migration in an insectivorous owl. Seventh North American Ornithological Conference: Flight Paths Addressing Global Challenges. Online. August 2020. (Oral Presentation)

\*Ellison, J., and B. D. Linkhart. Effect of nest predation on Flammulated Owl (*Psiloscops flammeolus*) nest site selection. Seventh North American Ornithological Conference: Flight Paths Addressing Global Challenges. Online. August 2020. (Poster Presentation)

Linkhart, B. D. Migratory pathways, stopover locations, and wintering destinations of Flammulated Owls (*Psiloscops flammeolus*) breeding in Colorado. Annual Meeting of the American Ornithological Society. Anchorage, AK. June 2019. (Oral Presentation)

\*Yanco, S. W., A. L. McDevitt, L. M. Hartley, B. D. Linkhart, and M. B. Wunder. Check yourself: Using agent-based models to test the logic of hypotheses. Annual Meeting of the Ecological Society of America. New Orleans, LA. August 2018. (Oral Presentation)

Linkhart, B. D. Climate correlates of breeding phenology and reproductive performance in Flammulated Owls. Annual Meeting of the American Ornithological Society (136th Stated Meeting). Tucson, AZ. April 2018. (Oral Presentation)

Yanco, S. W., B. D. Linkhart, and M. B. Wunder. Home-range scale habitat selection patterns do not necessarily imply home-range scale decisions. Annual Meeting of the American Ornithological Society (136th Stated Meeting). Tucson, AZ. April 2018. (Oral Presentation)

McGinn, K. A.\*, J. M. Eisaguirre, and B. D. Linkhart. Temporal changes in Flammulated Owl (*Psiloscops flammeolus*) habitat use in Colorado. Annual Meeting of the Raptor Research Foundation. Salt Lake City, UT. November 2017. (Poster Presentation)

Herzog, J. L.\*, J. M. Eisaguirre, B. D. Linkhart, and T. L. Booms. Trophic niche partitioning between male and female Golden Eagles in western Alaska. Annual Meeting of the Raptor Research Foundation. Salt Lake City, UT. November 2017. (Oral Presentation)

Linkhart, B. D., J. W. Fox, and S. W. Yanco\*. Migration path and wintering areas of Flammulated Owls (*Psiloscops flammeolus*) breeding in Colorado. Annual Meeting of the Raptor Research Foundation. Cape May, NJ. October 2016. (Oral Presentation)

Eisaguirre, J. M.\*, B. W. Robinson, T. L. Booms, and B. D. Linkhart. Toward a foundation for determining the ecological effects of climate change on arctic ecosystems: Dietary composition of and overlap between two avian apex predators on the Seward Peninsula, AK. Annual Meeting of the Raptor Research Foundation. Sacramento, CA. November 2015. (Poster)

Eisaguirre, J. M.\*, B. W. Robinson, T. L. Booms, and B. D. Linkhart. Toward a foundation for determining the ecological effects of climate change on arctic ecosystems: Dietary composition of and overlap between two avian apex predators on the Seward Peninsula, AK. Joint Annual Meeting of the Wilson Ornithological Society, Association of Field Ornithologists, and Society of Canadian Ornithologists. Wolfville, Nova Scotia, Canada. July 2015. (Poster)

Eisaguirre, J. M.\*, T. L. Booms, and B. D. Linkhart. Dietary analysis of Golden Eagles on the Seward Peninsula, Alaska. Sixteenth Alaska Bird Conference. Juneau, AK. December 2014. (Poster)

Linkhart, B. D., and S. W. Yanco\*. Habitat selection by breeding Flammulated Owls in a post-fire environment. Thirty-ninth Conference of the Western Field Ornithologists, Symposium on Avifaunal Change in Western North America. San Diego, CA. October 2014. (Oral Presentation)

Eisaguirre, J. M.\*, T. L. Booms, P. F. Schempf, S. B. Lewis, M. Gottfried, and B. D. Linkhart. Gyrfalcon (*Falco rusticolus*) movements and home ranges on the Yukon-Kuskokwim Delta, Alaska. Annual Meeting of the Raptor Research Foundation. Corpus Christi, TX. September 2014. (Poster)

Linkhart, B. D. Climate correlates of breeding phenology and reproductive performance in Flammulated Owls. VII International Conference on Birds of Prey and Owls, Raptor Research Foundation. Bariloche, Argentina. October 2013. (Oral Presentation)

Linkhart, B. D. Migratory movements and stopover habitat of Flammulated Owls. Fifth North American Ornithological Convention. Vancouver, BC, Canada. August 2012. (Oral Presentation)

Yanco, S. W.\*, and B. D. Linkhart. Effects of landscape-scale fire on habitat selection by Flammulated Owls. Fifth North American Ornithological Convention. Vancouver, BC, Canada. August 2012. (Poster)

Linkhart, B. D. Shedding light on climate change effects and migration patterns in Flammulated Owls. Keynote Speaker, Annual Meeting of the Colorado Field Ornithologists. Trinidad, CO. May 2012.

Griscom, B.\*, B. D. Linkhart, and R. Hathaway. Prevalence of hemoparasites and their effects on body condition within a population of Flammulated Owls (*Otus flammeolus*). The American Society of Parasitologists, Rocky Mountain Conference of Parasitologists. University of Nebraska-Cedar Point Biological Station, Ogallala, NE. September 2011. (Oral Presentation)

Vierling, K. T., L. A. Vierling, B. D. Linkhart, P. Adams, J. L. Aycrigg, J. Pollock, G. Sadoti, and J. Vogeler. Placing the keystones: elucidating interactions among woodpeckers and cavity-dependent species for improved vertebrate conservation and management. Annual Meeting of The Wildlife Society, Idaho Falls, ID. March 2011. (Oral Presentation)

Salgado-Ortiz, J., B. D. Linkhart, and L. J. Calderon-Montanez\*. Morphology and plumage of Flammulated Owls: Possible Characteristics for Distinguishing Resident and Migratory Individuals. Tenth Congress for the Study and Conservation of Birds in Mexico. Xalapa, Veracruz, Mexico. October 2010. (Oral Presentation)

Linkhart, B. D., and S. W. Yanco\*. Nesting habitat characteristics of Flammulated Owls in Colorado. Joint Meetings of the American Ornithologists’ Union and the Cooper Ornithological Society. San Diego, CA. February 2010. (Oral Presentation)

Salgado-Ortiz, J., and B. D. Linkhart. Determination of the migrational status of Flammulated Owls in Michoacan, Mexico, based on stable-isotope analyses. Fifth Regional Forum of the Monarch Butterfly Biosphere Reserve. University of Michoacán, Morelia, Michoacán, Mexico. September 2008. (Oral Presentation)

Yanco, S. W.\*, and B. D. Linkhart. Selection of nesting habitat by Flammulated Owls in the Hayman Fire, Colorado. Joint Meetings of the American Ornithologists’ Union and the Cooper Ornithological Society. Portland, OR. August 2008. (Poster)

Nelson, M. D., D. H. Johnson, and B. D. Linkhart. Forest inventory analysis of nesting habitat in Flammulated Owls (*Otus flammeolus*). Presented at the World Owl Conference. Groningen, Netherlands. November 2007. (Oral Presentation)

Linkhart, B. D, D. S. Feierabend\*, and M. N. Silverman\*. A long-term trend toward earlier breeding in Flammulated Owls (*Otus flammeolus*). Annual Meeting of the American Ornithologists’ Union. University of Wyoming, Laramie, WY. August 2007. (Oral Presentation)

Linkhart, B. D, E. R. Evers\*, J. D. Megler\*, E. S. Palm\*, C. M. Salipante\*, and S. W. Yanco\*. Ecological factors affecting mating systems in Flammulated Owls. Annual Meeting of the Raptor Research Foundation. Green Bay, WI. November 2005. (Oral Presentation)

Palm, E. C.\*, and B. D. Linkhart. Characteristics of territorial song trees of Flammulated Owls in Colorado. Annual Meeting of the American Ornithologists’ Union. University of California-Santa Barbara, Santa Barbara, CA. August 2005. (Oral Presentation)

Linkhart, B. D. Selection of foraging and singing habitat in Flammulated Owls in Colorado. Annual Meeting of the Raptor Research Foundation. Bakersfield, CA. October 2004. (Oral Presentation)

Linkhart, B. D. Determining habitat quality from long-term demography in breeding Flammulated Owls. Annual Meeting of the American Ornithologists’ Union. University of Illinois, Urbana-Champaign, IL. August 2003. (Poster)

Linkhart, B. D., and R. T. Reynolds. Fidelity and dispersal in Flammulated Owls. Annual Meeting of the Raptor Research Foundation. La Paz, Mexico. November 1999. (Oral Presentation)

Linkhart, B. D. Demography of Flammulated Owls in Colorado. Guild of Rocky Mountain Population Biologists. Ward, CO. September 1999. (Oral Presentation)

Linkhart, B. D. Lifetime reproduction of Flammulated Owls in Colorado. Annual Meeting of the Cooper Ornithological Society. Portland, OR. March 1999. (Oral Presentation)

Linkhart, B. D. Density, productivity, and survival estimates of Flammulated Owls in Colorado. Annual Meeting of the Cooper Ornithological Society. Portland, OR. March 1999. (Oral Presentation)

Linkhart, B. D. Determining habitat quality of Flammulated Owls from long-term demographics. Annual Meeting of the Colorado Chapter of the Wildlife Society. Colorado Springs, CO. January 1999.

Linkhart, B. D. Habitat effects on territory occupancy, fidelity, and demographics in Flammulated Owls (*Otus flammeolus*). Second International Symposium, Biology and Conservation of Owls of the Northern Hemisphere. Winnipeg, Ontario. February 1997.

Reynolds, R. T., and B. D. Linkhart. Flammulated Owls in ponderosa pine: evidence of preference for old-growth. Workshop on Old-growth Forests in the Southwest and Rocky Mountain Region. Portal, AZ. March 1992.

Reynolds, R. T., R. A. Ryder, and B. D. Linkhart. Small forest owls. Symposium on Western Raptor Management. Boise, ID. October 1987.

Reynolds, R. T., and B. D. Linkhart. The nesting biology of Flammulated Owls in Colorado. International Symposium for the Biology and Conservation of Northern Forest Owls. Winnipeg, Ontario. March 1987.

Reynolds, R. T., and B. D. Linkhart. Fidelity to territory and mate in Flammulated Owls. International Symposium for the Biology and Conservation of Northern Forest Owls. Winnipeg, Ontario. March 1987.

Linkhart, B. D., and R. T. Reynolds. Breeding biology of Flammulated Owls (*Otus flammeolus*). International Symposium on the Management of Birds of Prey. Sacramento, CA. November 1985.

Reynolds, R. T., and B. D. Linkhart. Pair bonding and site tenacity in Flammulated Owls (*Otus* *flammeolus*). International Symposium on the Management of Birds of Prey. Sacramento, CA. November 1985.

Linkhart, B. D., and R. T. Reynolds. Size, spacing, and utilization of breeding territories by Flammulated Owls. Joint Meeting of the Wilson Ornithological Society and the Cooper Ornithological Society. Boulder, CO. June 1985.

Linkhart, B. D., and R. T. Reynolds. Range, activity, and habitat of nesting Flammulated Owls. Annual Meeting of the Colorado-Wyoming Academy of Science. Gunnison, CO. April 1984.

**INVITED LECTURES**

A bird’s-eye view: Conservation insights gained from long-term ecological investigations. Conservation Biology class at University of Colorado-Colorado Springs, Colorado Springs, CO. April 2017.

Habitat selection by Flammulated Owls in a post-fire landscape. Symposium on Avifaunal Changes in Western North America, Western Field Ornithologists. San Diego, CA. October 2014.

Keynote speaker: Climate change effects and migration patterns in Flammulated Owls. Annual Meeting of Colorado Field Ornithologists. Trinidad, CO. May 2012.

Effects of climate change on ponderosa pine forests of the southwestern U.S. U.S. Forest Service Symposium on Regional Climate Change. Pueblo, CO. March 2012.

A bird’s-eye view: Insights gained from long-term ecological investigations of forest birds. University of Denver, Denver, CO. April 2011.

Keynote speaker: Linking Science and Education in Conservation Efforts. Colorado Science Convention Annual Meeting. Denver, CO. December 2005.

Ecology and conservation of western pine forests. Linda Hall Library of Science, Engineering and Technology, Kansas City, MO. April 2004.

**FIELD SEMINARS/PRESENTATIONS—COMMUNITY**

Field seminar**:** Denver Field Ornithologists. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2019.

Field seminar**:** Aiken Audubon Society. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2019.

Field seminar**:** “I Have a Dream” Foundation of Boulder County (organization serving underprivileged 5th to 8th graders). Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2019.

Field seminar and Presentation**:** Pikes Peak Birding and Nature Festival, Colorado Springs, CO. Seminar title: “Ecology and conservation of Flammulated Owls”. May 2019.

Young Environmental Stewards, Catamount Institute (after school program for 3rd – 5th grade public school students). Manitou Experimental Forest, Woodland Park, CO. Presentation title: “Conservation of Forest Birds”. March 2019.

Field seminar**:** “I Have a Dream” Foundation of Boulder County (organization serving underprivileged 5th to 8th graders). Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar**:** American Birding Conservation. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar**:** Reefs to Rockies. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar**:** Evergreen Audubon Society. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar**:** Greater Denver Audubon Society. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar**:** Aiken Audubon Society. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar**:** Friends of the Florissant Fossil Beds National Monument, Florissant, CO. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2018.

Field seminar and Presentation**:** Pikes Peak Birding and Nature Festival, Colorado Springs, CO. Seminar title: “Biology and ecology of Flammulated Owls”. May 2018.

Field seminar and Presentation**:** Pikes Peak Birding and Nature Festival, Colorado Springs, CO. Seminar title: “Biology and ecology of Flammulated Owls”. May 2017.

Colorado College Retirees Luncheon, Colorado College. Presentation title: “Conservation of birds of prey”. May 2017.

Young Environmental Stewards, Catamount Institute, Colorado Springs, CO. Keynote Speaker at annual Spring Symposium. Presentation title: “Is climate change more than hot air?” April 2017.

Science Olympiad Club, Palmer High School, Colorado Springs, CO. Class presentation title: “Human impacts on forest ecosystems”. February 2017.

Women’s Educational Society, Colorado College. Luncheon presentation title: “Conservation of birds of prey”. February 2017.

Birds of Prey Foundation. Broomfield, CO. Keynote Speaker at annual fundraising event. Presentation title: “Birds of prey as environmental indicators”. September 2016.

Florissant Fossil Beds National Monument, Florissant, CO. Seminar title: “Climate change correlates of breeding phenology and reproductive performance in Flammulated Owls”. June 2016.

Field seminar and Presentation**:** Pikes Peak Birding and Nature Festival, Colorado Springs, CO. Seminar title: “Biology and ecology of Flammulated Owls”. May 2016.

Aiken Audubon Society. Colorado Springs, CO. Presentation title: “Ecology and habitat of forest owls in southern Mexico”. February 2016.

Pikes Peak Birding and Nature Festival (inaugural), Colorado Springs, CO. Presentation title: “Flammulated Owls as Sentinels of Environmental Change”. May 2015.

Young Environmental Stewards, Catamount Institute (after school program for 3rd and 4th grade public school students. Manitou Experimental Forest, Woodland Park, CO. Presentation title: “Conservation of Forest Birds”. March 2015.

Field seminar**:** Friends of the Florissant Fossil Beds National Monument, Florissant, CO. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2014.

Southwest Studies Aficionados Luncheon. Colorado College. Presentation title: “Where Do Flammulated Owls Migrate? Answer: A Tightly Held Mexican Secret”. April 2014.

Aiken Audubon Society. Colorado Springs, CO. Presentation title: “Winter Migration and Habitat of Flammulated Owls”. February 2014.

Denver Field Ornithologists. Denver, CO. Presentation title: “Flammulated Owls as Sentinels of Environmental Change” October 2013.

Young Environmental Stewards, Catamount Institute (after school program for 3rd and 4th grade public school students. Manitou Experimental Forest, Woodland Park, CO. Presentation title: “Conservation of Forest Birds”. March 2013.

16th Annual Pueblo Eagle Day Festival, Pueblo, CO. Presentation title: “Ecology and Conservation of Owls”. February 2012.

Bear Creek Nature Center, El Paso County Parks and Recreation, Colorado Springs, CO. Seminar title: “Habitat and Demography of Flammulated Owls: A Case Study of the Benefits of Long-term Research”. July 2011.

Field seminar**:** Friends of the Florissant Fossil Beds National Monument, Florissant, CO. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2011.

Young Environmental Stewards, Catamount Institute (after school program for 3rd and 4th grade public school students. Manitou Experimental Forest, Woodland Park, CO. Presentation title: “Biology and Conservation of Forest Owls”. March 2011.

Aiken Audubon Society. Colorado Springs, CO. Presentation title: “Habitat and Demography of Flammulated Owls: A Case Study of Benefits of Long-term Research”. February 2011.

Arkansas Valley Audubon Society. Pueblo, CO. Presentation title: “The Effects of Environmental Changes on Flammulated Owls”. February 2011.

Southwest Studies Aficionados Luncheon. Colorado College. Presentation title: “Wise Old Owls of the Ponderosa Pine Forests”. February 2010.

Arkansas Valley Audubon Society. Pueblo, CO. Presentation title: “Long-term Studies on Flammulated Owls”. February 2010.

U.S. Forest Service Open House, Manitou Experimental Forest, Woodland Park, CO. Presentation title: “Long-term Ecological Research on the Manitou Experimental Forest”. August 2009.

Young Environmental Stewards, Catamount Institute (after school program for 3rd and 4th grade public school students. Manitou Experimental Forest, Woodland Park, CO. Presentation title: “Biology and Conservation of Forest Owls”. March 2009.

Aiken Audubon Society. Colorado Springs, CO. Presentation title: “Effects of the Hayman Fire on Forest Raptors”. February 2009.

Field seminar**:** Friends of the Florissant Fossil Beds National Monument, Florissant, CO. Seminar title: “Ecology and Conservation of Flammulated Owls”. July 2007.

Friends of the Florissant Fossil Beds National Monument, Florissant, CO. Presentation title: “Fire and Flammulated Owls: Can Burned Forests and Flame-colored Owls Coexist?” April 2007.

Aiken Audubon Society. Colorado Springs, CO. Presentation title: “Recolonization of the Hayman Fire by Flammulated Owls”. February 2007.

Aiken Audubon Society. Colorado Springs, CO. Presentation title: “Mating Strategies of Flammulated Owls”. January 2006.

Denver Field Ornithologists. Denver, CO. Presentation title: “Ecology and Conservation of Forest Owls”. April 2005.

Field seminar**:** Aiken Audubon Society, Colorado Springs, CO. Guided field trip on identification and ecology of woodpeckers on the Pike National Forest. June 2004.

Annual Beta Beta Beta Biological Honor Society induction ceremony, U.S. Air Force Academy. Presentation title: “Ecology and Conservation of Birds”. March 2004.

Bear Creek Nature Center, El Paso County Parks and Recreation, Colorado Springs, CO. Presentation title: “Identification and Ecology of Forest Owls”. February 2004.

Aiken Audubon Society, Colorado Springs, CO. Presentation title: “Natural History and Ecology of Forest Raptors”. November 2003.

Southwest Studies Aficionados Luncheon. Colorado Springs, CO. Presentation title: “Whispering Owls of the Ponderosa Pine Forests”. February 2003.

#### PROFESSIONAL CONSULTATIONS/REVIEW REQUESTS

2018 Peer review basis of conservation status of Flammulated Owl in Washington State for Washington Department of Game and Fish.

2015 Provided assessment of impacts of forest management practices on Flammulated Owls on Arapahoe-Roosevelt National Forest. USFS Region 2 (CO).

2013 Collaborated with USFS leadership in planning investigation to determine effects of prescribed burning on sensitive birds in ponderosa pine ecosystems, Hot Creek Research Natural Area, Rio Grande National Forest. USFS Region 2 (CO).

2012 Provided assessment of regional effects of climate change on public lands. USDA Forest Service, Pike-San Isabel National Forest. USFS Region 2 (CO).

2011-2013: Provided assessment of preliminary plans to modify access by motorized vehicles and ORV, and their effects on wildlife, on USFS roads on the Pike National Forest. USFS Region 2 (CO).

2009-2013: Strategy team member for USDI Fish and Wildlife Service and Western Working Group of Partners in Flight (PIF)—development of survey protocol and plans to survey public lands for Flammulated Owls in Western U.S. (WA, OR, CA, NV, ID, MT, CO, NM, AZ). USFWS Regions 1, 2, 6, 8.

2009 Led workshop on importance of long-term research in forest ecosystems for the National Executive Team of the USDA Forest Service (Wash D.C.). Manitou Experimental Forest, CO.

2006 Provided assessment on extent of reuse of nesting sites by Flammulated Owls for a USFSW report being prepared on conservation on raptors on federal lands in the western United States. USFWS Region 6 (UT).

2006 Provided assessment on effects of forest management practices (forest thinning, prescribed burning) on populations of Flammulated Owls for Environmental Impact Statement (EIS) on Idaho Panhandle National Forests. USDA Forest Service, Region 1 (n Idaho).

2005 Provided assessment of impacts of Hayman Fire on raptor populations, and assisted planning for future research needs in burn area. USDA Forest Service, Pike National Forest, Region 2 (CO).

2004 Provided assessment of potential effects of road construction on local raptor populations in El Paso County, CO. Greystone Consulting, Denver, CO.

2004 Provided assessment of plan to monitor demography of Northern Spotted Owls in Golden Gate National Recreation Area (CA). USDI National Park Service.

2003 Provided requisite data on ecology and habitat relationships of Flammulated Owls needed for Habitat Conservation Assessment (HCA) for State of Montana. Parametrics Environmental Consulting, Seattle WA.

2002 Provided assessment of forest management practices on bird species on Boulder County Open Space. Boulder, CO.

2002 Provided assessment of effects of forest management practices on bird species on National Forests in Montana for EIS development. USDA Forest Service, Region 1 (MT).

2001 Provided assessment of suburban development on forest raptors on Boulder County Open Space. Boulder, CO.

2001 Provided assessment of human impacts on raptor populations on State lands bordering the San Isabel National Forest in Pueblo and Huerfano Counties. Colorado State Parks.

2001 Provided assessment of impacts by USAFA training exercises on forest avifauna on lands bordering the Pike National Forest. ENSR Consulting (CO).

#### SERVICE—COLORADO COLLEGE

2020-2021 **Faculty Executive Committee (FEC)**

* Assisted in vetting and discussing matters relevant to CC community
* Personnel Policies subcommittee; assisted in preparing options for FEC consideration related to personnel policies

2019-2020 **Honor Council**

* Served as faculty advisor (one of two faculty)

2016-2019 **Faculty Executive Committee (FEC)**

* Assisted in vetting and discussing matters relevant to CC community
* Governance subcommittee; assisted in preparing options for FEC consideration related to faculty matters

2017-2018 **Provost Search Committee**

* Served on committee consisting of CC faculty, staff, board members, and students in national search for new provost position at CC; search resulted in the hire of Dr. Alan Townsend

2015-2016 **Natural Sciences Executive Committee** (3 faculty)

* Assisting in oversight of Nat Science matters (finances, facilities, curriculum, etc.), Nat Science tenure-track faculty reviews, summer academic session

**Southwest Studies Program Search Committee**

* Assisted in search for new tenure-track faculty line in SWS Program (resulted in hire of Dr. Karen Roybal, currently lecturer at Univ. New Mexico)

**Summer Session Director Search Committee**

* Assisting in search for Summer Session Director, along with associate dean Emily Chan, Rebecca Tucker, Daniel Arroyo-Rodriguez, Megan Nicklaus, and Inger Bull

2013-2014 **Committee on the Curriculum, Chair**

* Researched and evaluated merits of multiple initiatives to enhance academic rigor across college academic divisions (committee membership: 3 faculty; 3 students; associate dean; director of assessment/program review)
* Prepared and presented recommendations for consideration at college-wide faculty meetings
* Efforts resulted in faculty approval of 2 initiatives (raised minimum passing grades for fulfilling all-college course requirements; increased (from 1 to 2) the number of unfinished units with which students may still march at Commencement), and faculty discussion of 6 additional initiatives

2011-2012 **Ad Hoc Presidential Transition Advisory Committee**

* Requested to represent faculty in offering guidance to in-coming President Dr. Jill Tiefenthaler during first months in office (committee membership: select board of trustees; faculty; staff; alumni)

2009-2012 **Department of Biology, Chair**

* Oversaw departmental affairs, including development of course schedules, budgets, faculty/staff interactions, staff supervision, interacting with Dean and all-college entities (12 tenure-track faculty, 4 staff, 2 paraprofessionals)
* Orchestrated national searches for 2 tenure-track faculty positions
* Orchestrated faculty reviews for 2 third-year,1 tenure, and 1 full professor candidates
* Mentored 3 junior faculty
* Oversaw searches for 4 sabbatical replacements
* Oversaw restructuring of Biology Major into two tracks (vision of Prof. Kelso), reformation of departmental curriculum (led by Profs. Ebersole and Huang)
* Revised departmental scholarship standards (led by Prof. Ebersole), guidelines for faculty course distribution
* Oversaw national search for chair replacement, orchestrated discussions of departmental vision
* Assisted in oversight of dept. affairs during transition to chair replacement from 2012-2014

2006-2009 **Department of Biology, Associate Chair**

* Prepared review of department budget, assisted with dept. response to College financial concerns
* Assisted with staff supervision, searches for sabbatical replacements, oversight of course schedule, budget, and dept. affairs

2011-2012 **Committee on the Curriculum, Faculty representative**

* Assisted in development of initiatives to address college-wide curricular issues

2007-2012 **Education Advisory Committee, Faculty representative**

2003-2007 **Dean’s Advisory Committee, Faculty representative**

2001- **Southwest Studies Program, Faculty Advisory Committee**

**Senior Thesis Advising (Primary Advisor only; since 2007)**

2019 Olivia Noonan. Molt patterns in Flammulated Owls.

2018 Jordan Ellison. Temporal and spatial dynamics of predation on Flammulated Owls by Red Squirrels

2017 Kate McGinn. Temporal changes in Flammulated Owl (*Psiloscops flammeolus*) habitat use in Colorado.

 Brae Salazar. Conspicuousness of Band-winged Grasshoppers to predators and conspecifics.

2016 Ellen Rigell. Habitat partitioning among sympatric select secondary cavity-nesting birds in Colorado.

2014 Joe Eisaguirre. Dietary analysis of Golden Eagles (*Aquila chrysaetos*) on the Seward Peninsula, Alaska.

2013 Bryan Grundy. Brood size dependent differences in prey delivery rates in Flammulated Owls (*Psiloscops flammeolus*).

2012 Erik Enbody. Predation of cavity-nesting birds by Red Squirrels (*Tamiasciurus hudsonicus*) in a mixed-conifer forest in Colorado

2012 Isabel Jones. ffects of gender and brood size on development of nestling Flammulated Owls (*Otus flammeolus*)

2011 John Gioia. Effects of Red Squirrel (*Tamiasciurus hudsonicus*) density on the reproductive success of Flammulated Owls (*Otus flammeolus*) in a montane forest of central Colorado

2011 Bailey Griscom. Prevalence of hemoparasites and their effects on body condition within a breeding population of Flammulated Owls (*Otus flammeolus*)

2010 Kendra Garner. Population dynamics of Flammulated Owls (*Otus flammeolus*): Modeling with geographic information systems (GIS)

2008 Quintana Baker. Modeling habitat quality for a breeding population of Flammulated Owls (*Otus flammeolus*)

2008 Kirsten Becker. Effects of reversed sexual size dimorphism on sex ratio and growth rates of nestling Flammulated Owls (*Otus flammeolus*)

2007 Jeremy Sueltenfuss. Effects of forest thinning on populations of small mammals and the avian community

2007 Samantha Tolve**.** Effect of ectoparasite load on body condition and mating success in fence lizards (*Sceloporus undulatus*)

#### SERVICE—EXTERNAL

2015-present: Affiliate faculty; serving on PhD committee at University of Colorado-Denver, Department of Integrative Biology

2018 Chair, oral session. Annual Meeting of the American Ornithological Society. Tuscon, AZ.

2012 Chair, oral session. Fifth North American Ornithological Convention. Vancouver, B.C.

2010 Chair, oral session. Joint Meetings of the American Ornithologists’ Union and the Cooper Ornithological Society. San Diego, CA.

2008 Chair, oral session. Joint Meetings of the American Ornithologists’ Union and the Cooper Ornithological Society. Portland, OR.

2007 Chair, oral session. Annual Meeting of the American Ornithologist’s Union. Laramie, WY.

2006 Chair, oral session. Annual Meeting of the Raptor Research Foundation. Green Bay, WI.

2001- Peer Review of Manuscripts/Reports—Global Change Biology, Journal of Raptor Research, Journal of Field Ornithology, The Auk, The Condor, Wilson Journal of Ornithology, Western North American Naturalist, Southwestern Naturalist, Wilson Bulletin, Journal of Geochemical Exploration, Forest Ecology and Management, Agricultural Science Research Journal, National Fish and Wildlife Foundation, U.S. Forest Service, U.S. Fish and Wildlife Service, U.S. National Park Service, Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

#### HONORS/RECOGNITION

2015 Research featured in *Colorado Springs Gazette*

2014 Research featured in *High Country News*

2013 Research featured in *Colorado Springs Gazette*

2012 Ronald A. Ryder Award—Colorado Field Ornithologists’ highest award for scholarly contributions and distinguished service in Ornithology

2010 Ray O. Werner Award for Exemplary Teaching at Colorado College

2009 Research featured in *Land Letter*, *Greenwire*

2008 Research featured on NPR, *Land Letter*

2006 Research featured in *Colorado Springs Gazette*

2006 Joe T. Gordon Prize in Southwest Studies

2004-2006 John D. and Catherine T. MacArthur Professorship

2003 Research featured in *Chronicles of Higher Education*

2001 Research featured in *The Natural Inquirer*, publication of USDA Forest Service for enhancing environmental curricula in middle/high schools

2000 Research featured on NPR’s *Earth and Sky*

1992-1998 Who’s Who Among America’s Teachers

#### PROFESSIONAL AFFILIATIONS

American Ornithologists’ Union

Cooper Ornithological Society

Raptor Research Foundation

Wilson Ornithological Society

Association of Field Ornithologists

Western Field Ornithologists

Cloud Ridge Naturalists - Board of Directors