

CURRICULUM VITAE

WAYNE H. WHALEY

Utah Valley University

Dept of Biology

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PROFESSIONAL OBJECTIVES

My goal is to teach and do research in my areas of interest at a college or university. Besides college teaching, I want to work with the Ornithology and Entomology collections. I would like to add to or build a good teaching collection of both vertebrates and arthropods. In both Ornithological and Lepidoptera collections I would enjoy the opportunity to improve and diversify the research collections. I have considerable experience with environmental consulting, and plan to continue this activity. I am interested in tropical biology and ecology and want to do more tropical biology teaching and research.

QUALIFICATIONS AND SCIENTIFIC BACKGROUND

1. EDUCATION

Graduate

Ph.D. 1988. Brigham Young University, Provo, Utah, Major: Zoology, GPA: 3.90, Dissertation: Trends in geographic variation of Cooper's Hawks and Northern Goshawks: A Multivariate Analysis. 107 pp.

M.S. 1979. University of Arizona, Tucson, Arizona Major: Wildlife Ecology, GPA: 3.90, Thesis: The ecology and status of the Harris' Hawk (*Parabuteo unicinctus*) in Arizona. 119 pp.

Undergraduate

B.S. 1975. Brigham Young University, Provo, Utah, Major: Zoology with Chemistry minor
GPA 3.69.

A.A. 1973. Ricks College, Rexbury, Idaho, Major: Biology.

2. SCHOLARSHIPS AND AWARDS

1986. ASBYU Publications Award, Winter Semester.

1983. Graduate Teaching Assistantship, B.Y.U., (taught Zool. 261, General Physiology laboratories).

Julia Greenwell Award, College of Biological and Agricultural Sciences, B.Y.U. Fall Semester.
- 1982-83. Tuition Award, B.Y.U., Fall & Winter Semester.
ASBYU Research Award, Fall & Winter Semester.
- 1981-83. Graduate Teaching Assistantship, B.Y.U., (taught Zool. 203, Vertebrate Zoology laboratories).
1981. Graduate Research Internship, B.Y.U., Winter Semester (visited museums in U.S. and Canada).

Graduate Teaching Assistantship, B.Y.U., (taught Zool. 261, General Physiology laboratories).
- 1976-78. Graduate Research Assistantship, sponsored through the University of Arizona, the U.S. Fish & Wildlife Service, the Arizona Game & Fish Dept., and the Wildlife Management Institute (support of M.S. research).
1975. Academic Scholarship, Brigham Young University.
- 1974-75. Dean's Scholarship, Brigham Young University.
- 1973-74. Academic Scholarship, Brigham Young University.
1973. Academic Scholarship, Ricks College, Spring Semester.
- 1971-72. Academic Scholarship, Ricks College.
1971. Student assistantship, Ricks College, Fall Semester.

3. PROFESSIONAL EXPERIENCE

- 1992 to present Professor of Biology, Utah Valley University, Orem, Utah
Classes taught: General Biology (BIOL 1010), Basic Ecology and Human Activities (BIOL 1050), College Biology I (BIOL 1610), College Biology II (BIOL 1620), Environmental Biology (BIOL 2500), General Ecology (BIOL 3700), Principles of Evolution (BIOL 2500), Animal Kingdom (ZOOL 1050), Vertebrate Zoology (ZOOL 3100), Animal Behavior (ZOOL 4000), Ornithology (ZOOL 4600).
- 2003 Environmental Consultant with Conoco Phillips Petroleum Corp. (Houston, TX) and Utah Division of Wildlife Resources on Raptor impact study along east slope of the

Wasatch Plateau (Helper to Huntington Canyon). Contacts: Chris Colt (DWR), Gene Simborski and Steve de Albuquerque (ConocoPhillips).

- 1989-95 Four months spring and summer contracts with the USDA Forest Service. I conduct surveys for sensitive, threatened or endangered species of Lepidopterans on Natl. Forest lands that were to be treated with larvacides in spring 1990 to eradicate infestations of **Gypsy Moths** (Lepidoptera). In summer 1993 I conducted experiments for the U.S.D.A Forest Service to determine the sensitivity of various rare species of Lepidoptera to the larvacide *Bacillus thuringensis*, a pesticide commonly used by the US Forest Service. Grants in excess of \$90,000.
1992. August contract with USDA Forest Service (Albuquerque, NM) doing surveys for a rare subspecies of *Speyeria nokomis* (Lepidoptera) in light of possible harm during spruce budworm (*Choristoneura fumiferana*) (Lepidoptera) eradication projects near Taos, New Mexico.
1986. Zoology stockroom assistant: consulting and construction of experimental apparatus. Construct wildlife dioramas (1/2 time). Dissertation research remainder of time.
1985. Subcontract through Dr. Clayton M. White; conducted environmental impact assessment on nesting raptors, sage grouse, and prairie dogs along proposed Exxon Oil of California pipeline in Wyoming, eastern Utah, and western Colorado (1 month contract).
1984. Stream bed surveys (spawn substrates, invert. counts) and fish censuses for U.S. Forest Service & Nevada Dep. of Wildlife, Elko Office, Elko, Nevada, Summer months.
1983. Contract with Ford, Bacon & Davis Engineers, Construction (Salt Lake City, Utah); conducted environmental impact study on nesting raptors in Rilda Canyon, Emery County, Utah (2 months).
1982. Research Biologist under contract with Dr. Gary Booth; conducted F.M.C. bird -pesticide interaction study (3 months).
1981. Conducted research on the ecology of buttressing in the tropical forest tree *Tachegalia versicolor* (Caesalpinioideae) at the Smithsonian Tropical Research Institute on Barro Colorado Island, Panama with Dr. Hal L. Black.
1980. Environmental consultant (on subcontract) for two bird surveys conducted for coal and fuel companies through and with Dr. Clayton M. White, BYU, Provo (2 months).
1979. Member of 1st Institute for Raptor Studies expedition to Mexico and Central America; raptor road censuses conducted from Mexico to Panama for 2.5 months.
- 1976-78. Two years of research on the Harris' Hawk in Arizona (published MS degree).

4. SOCIETY AFFILIATIONS AND AWARDS

Association of Field Ornithologists (not current)
American Ornithologists' Union (not current)
Cooper Ornithological Society (not current)
The Association for Tropical Lepidoptera (Charter Member)
Utah Lepidopterists' Society (past president 2007)
Phi Theta Kappa
Honor Society of Phi Kappa Phi

5. MEMBERSHIP ON SCIENTIFIC COMMITTEES

Selected as member Utah's "Gypsy Moth Decision and Action Committee" - Feb. 1989.
Selected member of the "Environmental Assessment Committee" within the "Gypsy Moth Decision and Action Committee" for the State of Utah - Jan. 1991.

6. PAPERS AND PRESENTATIONS

A. Peer Reviewed Publications

Alexander, J.A., **W. Whaley**, N. Blaine. **2018**. The *Lomatium Grayi* Complex (Apiaceae) of the Western United States: A taxonomic revision based on morphologic, essential oil composition, and larval-host coevolution studies. *Journal Botanical Research Institute of Texas* 12(2):387-444.

Dev, V., **W. Whaley**, S.R. Bailey, E. Chea, J. Dimaano, D. Jogani, B. Ly and D. Eggett. **2010**. Essential oil composition of nine Apiaceae species from western United States that attract the female Indra Swallowtail butterfly (*Papilio indra*). *Biochemical Systematics and Ecology* 38:538-547.

Beauchamp, P.S., V. Dev*, **W. Whaley**, H. D. Tran. **2011**. California *Lomatiums*, Part VIII. Analysis of essential oils of *Lomatium marginatum* (Benth.) Coult. & Rose var. *purpureum* Jepson. Isolation of (Z)- β -lomatene, a new sesquiterpene hydrocarbon. *J. Essential Oil Research* 23 (January/February):112-118.

Beauchamp, P., E. Chea, J. Dimaano, V. Dev, B. Ly, A. Miranda and **W. Whaley**. 2009. Essential oil composition of six *Lomatium species* attractive to Indra swallowtail butterfly (*Papilio indra*): principal component analysis against essential oil composition of *Lomatium dissectum* var. *multifidum*. *J. Essential Oil Research* 21 (November/December): 535-542.

Dev, V., B. Ly, A. Miranda and **W. Whaley**. 2007. *Lomatium grayi* and Indra Swallowtail Butterfly (*Papilio indra*): Composition of the Essential Oils of Three Varieties of *Lomatium grayi* (J. M. Coult & Rose) J. M. Coult and Rose. *J. Essential Oil Research* 19 (May/June): 201-205.

Whaley, W. H., J. Anhold and G. B. Schaalje. 1998. Canyon Drift and Dispersion of *Bacillus thuringiensis* and Its Effects on Select Nontarget Lepidopterans in Utah. *Environmental Entomology* 27(3):539-548.

- Anhold, J. A. and **W. Whaley**. 1996. Survey Summary for Threatened, Endangered, Sensitive and Locally Rare Species of Lepidoptera (Utah Gypsy Moth Eradication Program: 1989-1993). USDA Forest Service, Intermountain Region Technical Report Series.
- Whaley, W. H., and C. M. White. 1994. Trends in geographic variation in Cooper's Hawk and Northern Goshawk in North America. *Proceedings of the Western Foundation of Vertebrate Zoology*. Vol. 5(3):161-209.
- Whaley, W. H. 1990. Book Review (Butterflies of the South East Asian Islands) J. of the Lepidopterists Society Vol. 44 (2):107-110.
- Warren, S. D., H. L. Black, D. A. Easton and **W. H. Whaley**. 1988. Structural function of buttresses in *Tachigalia versicolor*. *Ecology* 69:532-536.
- Bednarz, J. C., J. W. Dawson and **W. H. Whaley**. 1988. Harris'Hawk. Pages 71-82 in *Proceedings of the Southwest Raptor Management Symposium and Workshop*. (R. L. Glinski, et al., eds.), Natl. Wildl. Fed., Washington, D.C.
- Ellis, D. H., D. G. Smith, **W. H. Whaley** and C. H. Ellis. 1988. Crested Caracara. Pages 119-126 in *Proceedings of the Southwest Raptor Management Symposium and Workshop*. (R. L. Glinski, et al., eds.), Natl. Wild. Fed., Washington, D.C.
- Whaley, W. H. 1986. Population ecology of the Harris' Hawk in Arizona. *Raptor Research*. 20(1):1-15.
- Ellis, D.H. and **W. H. Whaley**. 1983. New World vulture counts in Mexico, Central America, and South America. In: Vulture Biology and Management, Stanford R. Wilbur and Jerome A. Jackson, Eds. University of California Press. 550 pp.
- Whaley, W. H. 1981. Butterfly Collecting on the Old Woman Plateau. *Utahensis* 1(1):11-12.
- Ellis, D. H. and **W. H. Whaley**. 1981. Three Crested Eagle records for Guatemala. *Wilson Bull.* 93: 284-285.
- Ellis, D. H. and **W. H. Whaley**. 1979. Two winter breeding records for the Harris' Hawk. *The Auk*. 96: 413.

B. Papers or Posters Presented at Scientific Meetings, Symposia, Seminars

- Whaley, Wayne. 2015. Our Wonderful American Crow: A Bird With An Attitude. Great Salt Lake Audubon Society. Tracy Aviary, SLC, Utah. February 17 (by invitation).
- Whaley, Wayne. 2011. American Crow: A Bird With An Attitude. Utah County Birders meeting. Bean Life Science Museum, BYU. April 21 (by invitation).

- Whaley, Wayne. 2010. Basin and Range Birds and Butterflies. Great Salt Lake Audubon 28th Annual Basin & Range Seminar (by invitation; 5-6 June) Oak Creek Campground, Millard Co. Utah.
- Whaley, W.H. 2010. Costa Rican natural history: part II (PowerPoint presentation). Utah Lepidopterists' Society, Bean Natural History Museum, BYU. February 12
- Korostanje, Jamie, Delita Moran, **Wayne Whaley**. 2010. Factors involved in successful reproduction of Cliff Swallows at Utah Valley University. UCUR, Southern Utah University 26 February 2010.
- Whaley, W.H. 2009. The Indra Swallowtail Butterfly: geographic variation and phylogeography. Meeting of Utah Native Plant Society (by invitation; 4 March). REI Outdoor Rec., Salty Lake City, UT
- Whaley, W.H. 2008. Costa Rican natural history: part I (PowerPoint presentation). Utah Lepidopterists' Society, Bean Natural History Museum, BYU November 8
- Whaley, W.H. 2008. Post presentation "Climate Change and Indra Swallowtail (*Papilio indra*). 9-11 April, Awuarius Casino Resort, Laughlin, NV.
- Whaley, W.H. 2008. My first journey into and "Out of Africa", (Based on a recruiting trip to Kenya with International Center). "Armchair Traveler's Series". Orem Friendship Center, Orem, UT.
- Whaley, W.H. 2007. My first journey into and "Out of Africa", (Based on a recruiting trip to Kenya with International Center), UT Lepidopterists' Society 10 November. UVSC.
- Whaley, W.H. 2007. My first journey into and "Out of Africa", (Based on a recruiting trip to Kenya with International Center), UVSC, Biology Seminar, 2 November. UVSC.
- Whaley, W.H. 2007. Close-up Photography Methods for Insects. Present for Utah Lepidopterists' Society, Utah Museum of Natural History, SLC, UT, 10 February.
- Whaley, W. H. 2006. The Amazing *Papilio indra*. Pacific Slope Section of the Lepidopterists' Society Annual Meeting, Ephraim, Utah, 21-23 July 06.
- Whaley, W. H. 2006. Teaching with Lepidoptera: BioPrinciples through Butterflies. Presentation given by invitation of Central Utah Science and Engineering Fair at BYU, Provo, Utah, March 30, 2006.
- Whaley, W. H. 2005. The Indra Swallowtail butterfly: geographic variation and phylogeography. Invitation from Utah Lepidopterists' Society. At BYU Bean Museum, Dec. 10, 2005.
- Whaley, W. H. 2005. The Indra Swallowtail butterfly: geographic variation and phylogeography. Entomology Society at Utah State University. May, 2005.

- Whaley, W. H. 2005. Ernst Mayr, the Ornithologist given at Ernst Mayr's Tribute (he passed away 3 Feb. 2005 at age 100). At a symposium: "The Growth of Biological Thought" on 1 March 2005 at Utah Valley State College.
- Goodwin, K., M. Hogg, D. Walker, J. Wright, J. Price, **W. Whaley**. 2004. Molecular Biogeographic Analysis of the Relationships Between *Papilio indra* Subspecies. Poster presentation at AAAS annual meeting, Utah State University, June 2004.
- Whaley, W. H. 2004. The Swallows of UVSC. By invitation. A presentation at a Department of Biology Seminar. December 8, 2004.
- Whaley, W. H. 2004. My Excursion in the Central American Tropics. By invitation presentation to Utah Lepidopterists' Society. February 14, 2004.
- Whaley, W. H. 2003. My Excursion in the Central American Tropics. UVSC Department of Biology Seminar. November 14, 2003.
- Graham, B, D. Burton, M. Griffith, H. Mullen, A. Butler, J. Price and **W. Whaley**. 2003. Molecular Biogeographic Analysis of the Relationships Between *Papilio indra* subspecies. Poster presentation at 17th Nation Conference on Undergraduate Research held in Salt Lake City, 13-15 March.
- Whaley, W. H. 2001. "Evolution of Races in Indra Swallowtail Butterflies". A presentation for Integrated Studies— forum for faculty research. Utah Valley State College, Nov. 14.
- Whaley, W. H. 2001. "Geographical Variation in the Indra Swallowtail Butterfly". A presentation for the Local Chapter of The Lepidopterist Society, held at Utah Valley State College, on 13 January.
- Whaley, W. H. 2000. "The Lepidoptera". A presentation for the Parrot Lovers Club at Utah Valley State College, on evening of 16 November.
- Whaley, W. H. 2000. "The Lepidoptera". A presentation for the Utah County Birder's Association at the Monte Bean Science Museum, BYU campus, on evening of 18 October.
- Whaley, W. H. 2000. "Biodiversity: Nature's Genetic Treasure". Biology in the Twenty-First Century: Genetics, Economics, Ethics symposium held at UVSC on 21-22 September.
- Whaley, W. H. 2000. "In Search of the Rare Indra Swallowtail Butterfly". By invitation presented as Keynote Address at the annual meeting of the Pacific Slope Section of The Lepidopterists, Society 23 June, Grants Pass, Oregon.
- Whaley, W. H. 1999. The "Not So Rare" Indra Swallowtail. Paper presented at The 50th Annual Meeting of the Lepidopterists' Society held in Sierra Vista, Arizona on 4-8 August 1999.

Whaley, W. H. 1998. In Search of the Elusive Indra Swallowtail. Paper presented at a Colloquium sponsored by the Colorado Plateau Field Institutes, at Utah Valley State College, March 24, 1998.

Whaley, W. H. and C. M. White. 1992. Trends in geographic variation of Cooper's Hawk and Northern Goshawk: A multivariate analysis. World Working Group on the Birds of Prey - Annual Symposium, May 1992, Berlin. (Presented by C. M. White).

Whaley, W. H. 1989. A survey for threatened, endangered, sensitive and locally rare species of diurnal Lepidoptera in the Utah 1990 Gypsy Moth eradication program. The Gypsy Moth Annual Review Annapolis, Maryland (6-9 Nov. 1989).

Whaley, W. H., J. C. Bednarz and J. W. Dawson. 1986. Population status of the Harris' Hawk in southwestern United States. Paper presented at: Southwest Raptor Management Symposium and Workshop., Univ. of Ariz., Tucson, Ariz. (21-24 May 1986).

Ellis, D. H., **W. H. Whaley** and D. G. Smith. 1986. Status and distribution of the Crested Caracara in the southwest. Paper presented at: Southwest Raptor Management Symposium and Workshop., Univ. of Ariz., Tucson, Ariz. (21-24 May 1986).

Whaley, W. H. 1978. The Harris' Hawk: its population and peculiarities. Paper presented at the Raptor Research Foundation Annual meeting, Tempe, Arizona.

C. Community Service Presentations

Whaley, W. H. Presentation on Lepidoptera (Butterflies and Moths) for first graders at Scera Park Elementary School, 3 May 2016

Whaley, W. H. Presentation on Lepidoptera (Butterflies and Moths) for third graders at Scera Park Elementary School, 10 May 2016

Whaley, W. H. Presentation on Costa Rican Nature. Dec. 13, 2008. Bean Museum, BYU.

Whaley, W. H. Presentation on insects for Mountainlands Head Start (Heather Rockwood Students) at UVSC Rm SB-111. 16 April 2004

Whaley, W. H. Presentation on insects (mainly butterflies) for UVSC head start students at UVSC Rm SB-111. April 2003

D. Papers in Preparation

Whaley, W. H. In prep. Seasonal behavioral variation of the American Crow (*Corvus brachyrhynchos*) in Utah: a visual/textual representation of behavioral diversity. In prep. for online journal submission.

Alexander, J. A., **W. H. Whaley** and N. Blain. In prep. A taxonomic revision of the *Lomatium grayi* species complex based on morphology, chemistry and larva-host coevolution studies.

Whaley, W. H. Geographic variation in *Papilio indra minori*. (In prep. for Journal of the Lepidopterists' Society).

Whaley, W. H. A new race of *Papilio indra* from the Great Basin of Utah. (In prep. for Journal of the Lepidopterists' Society).

Whaley, W. H. Three aberrant swallowtail butterflies from northern Utah. (In prep. for The Journal of Research on the Lepidoptera).

Whaley, W. H. The discovery of a late flying population of *Neominois ridingsii* along the Wasatch Front of Utah: its biology and distribution. (In prep. for Journal of the Lepidopterists' Society).

E. Reports and Technical Papers

Whaley, W. H. 1994. The monitoring of sensitive Utah Lepidoptera during the Gypsy Moth eradication program, 1990 to 1993. U.S.D.A. Forest Service, State and Private Forestry, Office of Forest Pest Management, Ogden, Utah, U.S.A.

Whaley, W. H. 1993. A survey for threatened, endangered, and locally rare species of Lepidoptera for the Utah 1993 Gypsy Moth project. U.S.D.A. Forest Service Report, Office of Forest Pest Management, Ogden, Utah.

Whaley, W. H. 1991. A survey for threatened, endangered, and locally rare species of diurnal Lepidoptera in the Utah 1990 and potential 1991 Gypsy Moth eradication area. U.S. Forest Service Report, Office of Forest Pest Management, Ogden, Utah.

Whaley, W. H. 1989. A survey for threatened, endangered, sensitive and locally rare species of diurnal Lepidoptera in the Utah 1990 Gypsy Moth eradication program. U.S. Forest Service Report, address as above.

Whaley, W. H. 1983. The status of nesting raptors in Rilda Canyon, Emory County, Utah. On file with Ford, Bacon, and Davis Engineers and Construction, Salt Lake City, Utah.

Whaley, W. H. 1979. The ecology and status of the Harris' Hawk (*Parabuteo unicinctus*) in Arizona. M.S. Thesis. University of Arizona, Tucson. 119 pp.

Whaley, W. H. 1978. The Harris' Hawk in Arizona. Research interim report in Fisheries and Wildlife Research, U. S. Fish and Wildlife Service.

7. PEER REVIEWS FOR JOURNALS AND PROPOSALS AND REVIEWS OF TEXTBOOKS

Peer Review of article: "A new subspecies of *Eueides lampeto*, 1862 (Nymphalidae: Heliconiinae from Surinam" for Journal of the Lepidopterists' Society. 14 Mar. 2009.

Peer Review of article: “Some distasteful Asian *Papilio* L. butterflies (Papilionidae)” for Journal of the Lepidopterists’ Society. 25 Feb. 2005.

Peer Review of article: “Is the concept of kin selection valid for the Lepidoptera?” for Journal of the Lepidopterists’ Society. 25 Feb. 2005.

Peer Review of article: “Harris’s Hawk dies after colliding with a motor vehicle” Coulson & Coulson, for The Journal of Raptor Research, a publication of The Raptor Research Foundation, Inc. Reviewed: Jan. 2003.

Peer Review for Journal of Tropical Forest Science, Forest Research Institute, Kepong, Malaysia. This was a forest pest management paper. April 1999.

Peer Review for a proposal for a Bt corn/monarch butterfly impact study out of Iowa State University (find the correct reference)

Peer Review for a BLM study involving Restriction Fragment Length Polymorphism in Northern Goshawk and Queen Charlottes Islands Goshawks. (Sandy Lumas – Call Clayton White to get complete title)

Reviewed chapters for the 10th edition of Concepts in Biology, Enger and Ross for McGraw-Hill publishers. Spring Semester 2001

Reviewed chapters for the 10th edition of Concepts in Biology, Enger and Ross for McGraw-Hill publishers. Spring Semester 2000

Reviewed two chapters (1st drafts) for a new general biology text, *Biology and Society: An Issues Approach*, Borden and Belk, for Prentice Hall publisher, July 2001.

Reviewed chapters for the 11th edition of Concepts in Biology, Enger and Ross for McGraw-Hill publishers. Spring Semester 2004

8. TECHNICAL SKILLS

Statistics -- Proficient at Analysis of Variance, Analysis of Covariance, Multiple Regression, Non-parametric methods, and Multivariate statistical methods.

Curation of Birds and Insects -- Collect, spread, and maintain insect collections, especially Lepidoptera, identifying Lepidoptera to species level, and maintaining a personal collection of several hundred butterfly and moth specimens. Preparation and curation of birds. Experience with mammals, reptiles and amphibian.

Photography -- Copywork, close-up work, and nature photography.

Construction -- Skilled at working with wood and metal from fabricating experimental apparatus to building homes.

9. CAREER PROFILE

Areas of Interest

Main interests are in vertebrates esp. birds and in the maintenance of genetic diversity through various conservation practices. Birds and Lepidoptera will likely be emphasized in future studies. I am interested in doing ecological field studies in vertebrates (game and non-game) and in certain invertebrates such as the Lepidoptera. I would also like the opportunity to do systematics and biogeographical research. I would like to teach in any area of the life sciences, and I plan to continue my environmental consulting work.

Professional Abilities

Peer Reviews and Grant Proposal Reviewer for Professional Journal and Grant Agencies

Pear-reviewer for articles for Journal of Tropical Forest Science.

Reviewer of grant proposals for Leopold Center For Sustainable Agriculture, Iowa State University, Ames, IA

Reviewer of grant proposals for U.S. Geological Survey/BRD, Alaska Biological Science Center.

Consulting. BioWest Consulting (owner) Environmental consultant on several occasions.

Knowledgeable on formalities of proper interagency communication and of proper procedures for conducting field work and drafting environmental impact statements. Comfortable working and communicating with personnel of a broad spectrum of education and training (from corporate and agency executives to field technicians).

Teaching Experience Ornithology, Vertebrate zoology, Animal Behavior, Ecology, Evolutionary biology.

10. HOBBIES

Hiking, hunting, birding, butterfly watching and collecting, wood working, drawing, painting, sculpturing, photography, nature and travel.

11. REFERENCES

Dr. Clayton M. White

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(Ornithologist and curator of bird)

Dr. James Price

Biology Dept. Chair
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work (801) 863-7447
(Geneticist)

Dr. Hal L. Black

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