

Amy B. Welsh
School of Natural Resources
West Virginia University
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EDUCATION

University of California – Davis, 2001-2006

Graduated with a Ph.D. in Ecology; Area of Emphasis: Conservation Biology

Dissertation title - Lake Sturgeon Conservation in the Great Lakes: Scaling it Up from Genetics to Policy

The George Washington University, Washington, DC, 1997-1999

Graduated with a Master of Forensic Sciences

University of Maryland at College Park, 1992-1996

Graduated with a Bachelor of Science in Zoology and Psychology

WORK EXPERIENCE

West Virginia University

Professor (2023-present)

Associate Professor (2017-2023)

Assistant Professor (2011-2017)

- Develop a research program in conservation genetics
- Teach an undergraduate and graduate course in conservation genetics
- Teach a large-lecture undergraduate course in conservation ecology
- Mentor M.S. and Ph.D. students
- Advise undergraduate students

State University of New York – Oswego

Assistant Professor (2006-2011)

- Taught courses in Evolution, Conservation Genetics, Introductory Biology lab, Zoology seminar, and Biological Conservation
- Designed laboratory class in genetics
- Mentored students on senior honors thesis projects related to genetics, ecology, or zoology
- Developed a genetics research program
- Collaborated with faculty on research projects involving ecological genetics
- Advised undergraduates on course selection and career goals

University of California – Davis

Post-doctoral Researcher (2006)

Graduate Research Assistant (2001-2006)

- Designed primers to target disomic microsatellite loci.

- Coordinated microsatellite standardization among nine genetic laboratories.
- Assess population genetic structure of 21 lake sturgeon populations throughout the Great Lakes using microsatellites and mitochondrial DNA (mtDNA), and visualizing results on an MJ Research BaseStation.
- Assign non-spawning individuals to most likely natal site of origin.
- Develop a genetics-based management plan for lake sturgeon throughout the Great Lakes basin.
- Assisted in microarray project examining whirling disease resistance in rainbow trout.
- Conducted policy analysis of state versus federal legislative protection of lake sturgeon.
- Write proposals and reports for funding agencies.
- Present results to managers and biologists at various meetings.

United States Fish and Wildlife Service, Sacramento, CA

Fish and Wildlife Biologist, Student Trainee (SCEP) (2004-2006)

- Conduct interagency consultations authorized by Section 7 of the Endangered Species Act on projects within the San Joaquin Valley, affecting species such as the San Joaquin kit fox and valley elderberry longhorn beetle.
- Review Habitat Conservation Plans for the issuance of incidental take permits.
- Provide technical assistance to nonfederal projects.
- Provide genetic assistance on listing decisions, candidate evaluations, and recovery projects.
- Guide projects that impact the riparian brush rabbit and assist in implementation of their recovery strategy, while serving as a member of the recovery team.

Great Lakes Fishery Commission, Ann Arbor, MI

Three-Month Detail (February 2005-May 2005)

- Interacted with managers and biologists in the Great Lakes region to obtain input on lake sturgeon management issues.
- Developed genetic management guidelines addressing lake sturgeon stocking throughout the Great Lakes basin.
- Observed the coordination of interjurisdictional fisheries management by attending committee meetings at various hierarchical levels.

Armed Forces DNA Identification Laboratory, Rockville, MD

DNA Analyst (2000-2001); DNA Technician (1999-2000)

- Extracted, amplified, sequenced, and analyzed mtDNA from the bloodstains of family references of missing soldiers to be used in the development of a database.
- Validated a high-throughput laboratory method for the sequencing of DNA, fine-tuned the system, and trained team members on the proper utilization of the technique.

National Fish and Wildlife Forensics Laboratory, Ashland, OR

Forensic Biology Intern (Summer 1998)

- Extracted, amplified, sequenced, and analyzed mtDNA of sturgeon to determine the frequency of mislabeled caviar and to develop a database containing the sequences of different species of sturgeon.

Walter Reed Army Institute of Research, Forest Glen, MD

Research Assistant (1995-1999)

- Performed microsleep and spectral analyses on EEG data collected from sleep deprivation studies and trained students in microsleep analysis.
- Conducted statistical analyses on actigraphy and oculomotor data.

- Mapped PET data onto MRI.
- Managed a sleep dose-response study involving human subjects, which included supervising shift workers and overseeing proper data collection.

TEACHING EXPERIENCE

Professor (2023-present); **Associate Professor** (2017-2023); **Assistant Professor** (2011-2017)
West Virginia University

Classes taught: Conservation Genetics (undergraduate & graduate courses); Conservation Ecology; Tropical Conservation

Assistant Professor (2006-2011)

State University of New York – Oswego

Classes taught: Evolution; Conservation Genetics; Zoology Seminar; Laboratory in Genetics; Introductory Biology Laboratory; Biological Conservation

Teaching Assistant, Introduction to Biological Sciences – Zoology (2004)

University of California – Davis

Prepare and present lecture for laboratory sections. Assist students with laboratory exercises. Grade quizzes and assignments.

Guest Lecturer, Conservation Genetics Seminar (2003)

University of California – Davis

Presented lecture on the maintenance of genetic diversity in small populations.

PEER-REVIEWED PUBLICATIONS

(underlined authors: student/post-doc authors)

Johnson, A., Zipfel, K., Hallerman, E., Massure, W., Euclide, P., and **Welsh, A.** (2023) Genomic evaluation of native Walleye in the Appalachian region and the effects of stocking. *Transactions of the American Fisheries Society* 152: 346-360.

Akers, M., Quinlan, H., Johnson, A., Baker, E., and **Welsh, A.** (2023) Parentage analysis reveals unequal family sizes during hatchery production. *Fishes* 8: 140.

Millikin, A.R., Davis, D.R., Brown, D.J., Woodley, S.K., Coster, S., **Welsh, A.**, Kerby, J.L., and Anderson, J.T. (2023) Prevalence of Ranavirus in spotted salamander (*Ambystoma maculatum*) larvae from created vernal pools in West Virginia, USA. *Journal of Wildlife Diseases* 59: 24-36.

Millikin, A.R., Coster, S.S., **Welsh, A.B.**, and Anderson, J.T. (2023) Pool age and local habitat are associated with effective number of breeders in spotted salamander populations colonizing created vernal pools. *Diversity* 15: 124.

Landry-Giovotella, S., Roof, J., Rogers, R., **Welsh, A.**, Ryan, C., and Anderson, J. (2022) Dietary patterns suggest West Virginia bobcats are generalist carnivores. *Journal of Fish and Wildlife Management* 13(2): 447-459.

Rounsville, Jr., T.F., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2022) Novel hair snare and genetic methods for non-invasive bobcat detection. *Ecology and Evolution* 12: e8435.

Hassler, K.N., Kessinger, B.E., Harms, C.E., Price, L.E., Barton, E.P., Oxenrider, K.J., Rogers, R.E., Pearce, K.J., Serfass, T.L., and **Welsh, A.B.** (2021) Genetic confirmation of predation of an adult female eastern spotted skunk by a barred owl. *Southeastern Naturalist* 20: 110-118.

- Hinderer, J.L.M., Blevins, Z., Cooke, S.J., Dunlop, E., Robinson, K.F., Stang, D.L., Stewart, T.J., Tyson, J.T., **Welsh, A.B.**, Young, N., and Muir, A.M. (2021) Insights from a novel, user-driven science transfer program for resource management. *Socio-Ecological Practice Research* 3: 337-362.
- Nathan, L.R., Kanno, Y., Letcher, B.H., **Welsh, A.B.**, Whiteley, A.R., and Vokoun, J.C. (2020) Evaluation of genetic structuring within GIS-derived Brook Trout management units. *Transactions of the American Fisheries Society* 149(6): 681-694.
- Frantz, M.W., Wood, P.B., Latta, S., and **Welsh, A.** (2020) Epigenetic response of Louisiana Waterthrush (*Parkesia motacilla*) to shale gas development. *Ibis* 162: 1211-1224.
- Whitaker, J.M., Price, L.E., Boase, J., Bernatchez, L., and **Welsh, A.B.** (2020) Detecting fine-scale population structure in the age of genomics: a case study of lake sturgeon in the Great Lakes. *Fisheries Research* 230: 105646.
- Welsh, A.**, Carlson, D., Schlueter, S., and Jackson, J.R. (2020) Tracking stocking success in a long-lived species through genetics and demographics: evidence of natural reproduction in Lake Sturgeon after twenty-two years. *Transactions of the American Fisheries Society* 149: 121-130.
- Gibson, I., **Welsh, A.B.**, Welsh, S.A., and Cincotta, D.A. (2019) Genetic swamping and possible species collapse: tracking introgression between the native Candy Darter and introduced Variegated Darter. *Conservation Genetics* 20: 287-298.
- Jensen, M., Hamburg, S.D., Rota, C.T., Brinker, D.F., Coles, D.L., Manske, M.A., Slabe, V.A., Stuber, M.J., **Welsh, A.B.**, and Katzner, T.E. (2019) An improved mechanical owl for efficient capture of nesting raptors. *Journal of Raptor Research* 53(1): 14-25.
- Welsh, A.B.**, Schumacher, L., and Quinlan, H. (2019) A reintroduced lake sturgeon population comes of age: a genetic evaluation of stocking success in the St. Louis River. *Journal of Applied Ichthyology* 35(1): 149-159.
- Nathan, L., **Welsh, A.**, and Vokoun, J. (2019) Watershed-level brook trout genetic structuring: evaluation and application of riverscape genetics models. *Freshwater Biology* 64(3): 405-420.
- Coster, S.S., **Welsh, A.B.**, Costanzo, G., Harding, S.R., Anderson, J.T., and Katzner, T.E. (2019) Gene flow connects coastal populations of a habitat specialist, the Clapper Rail *Rallus crepitans*. *Ibis* 161(1): 66-78.
- Whitaker, J.M., **Welsh, A.B.**, Hondorp, D.W., Boase, J.C., Merovich, Jr., G.T., Welsh, S., and Krueger, C.C. (2018) Variation in DNA methylation is associated with migratory phenotypes of lake sturgeon (*Acipenser fulvescens*) in the St. Clair River. *Journal of Fish Biology* 93(5): 942-951.
- Coster, S.S., **Welsh, A.B.**, Costanzo, G., Harding, S.R., Anderson, J.T., and Katzner, T.E. (2018) Genetic analyses reveal cryptic and asymmetric introgression in secretive marsh bird populations. *Ecology and Evolution* 8(19): 9870-9879.
- Wood, D.M., **Welsh, A.B.**, and Petty, J.T. (2018) Genetic assignment of brook trout *Salvelinus fontinalis* reveals rapid success of culvert restoration in headwater streams. *North American Journal of Fisheries Management* 38(5): 991-1003.
- Welsh, A.B.** (2018) Book Review: Genetic Management of Fragmented Animal and Plant Populations. *Journal of Wildlife Management* 82(5): 1082-1083.
- Nathan, L.R., Smith, A.A., **Welsh, A.B.**, and Vokoun, J.C. (2018) Are culvert assessment scores an indicator of Brook Trout *Salvelinus fontinalis* population fragmentation? *Ecological Indicators* 84: 208-217.
- Stiffler, L.L., Anderson, J.T., Welsh, A.B., Harding, S.R., Costanzo, G.R., and Katzner, T.E. (2017) Diel variation in detection and vocalization rates of King (*Rallus elegans*) and Clapper (*Rallus crepitans*) in intracoastal waterways. *Waterbirds* 40: 263-271.
- Welsh, A.B.**, Scribner, K.T., Stott, W., and Walsh, M. (2017) A population on the rise: the origin of Deepwater Sculpin in Lake Ontario. *Journal of Great Lakes Research* 43: 863-870.
- McDougall, C.A., **Welsh, A.B.**, Gosselin, T., Anderson, W.G., and Nelson, P.A. (2017) Rethinking the influence of hydroelectric development on gene flow in a long lived fish, the lake sturgeon *Acipenser fulvescens*. *PLoS One* 12(3): e0174269.

- Hessenauer, J.-M., Vokoun, J., **Welsh, A.**, Davis, J., Jacobs, R., and O'Donnell, E. (2017) Can largemouth bass transplanted from an unexploited population genetically contribute to an active fishery? A test case for genetic management of exploited fish populations. *North American Journal of Fisheries Management* 37: 271-283.
- Welsh, A.B.**, Mohr, L., and Boase, J.C. (2017) Identifying conservation hotspots in non-breeding areas: a case study of lake sturgeon (*Acipenser fulvescens*) in the Great Lakes. *Biodiversity and Conservation* 26: 931-941.
- Bruch, R.M., Haxton, T.J., Koenigs, R., **Welsh, A.**, and Kerr, S.J. (2016) Status of Lake Sturgeon (*Acipenser fulvescens* Rafinesque 1817) in North America. *Journal of Applied Ichthyology* 32: 162-190.
- Ma, W., Liang, J., Cumming, J.R., Lee, E., **Welsh, A.B.**, Watson, J.V., and Zhou, M. (2016) Fundamental shifts of Central Hardwood Forests under climate change. *Ecological Modelling* 332: 28-41.
- Marranca, J.M., **Welsh, A.B.**, and Roseman, E. (2015) Genetic effects of habitat restoration in the Laurentian Great Lakes: an assessment of lake sturgeon origin and genetic diversity. *Restoration Ecology* 23(4): 455-464.
- Welsh, A.B.**, Baerwald, M.R., Friday, M., and May, B. (2015) The effect of multiple spawning events on cohort genetic diversity. *Environmental Biology of Fishes* 98: 755-762.
- Buckner, J., **Welsh, A.B.**, and Sime, K.R. (2014) Evidence for population differentiation in the bog buckmoth of New York State. *Northeastern Naturalist* 21(4): 506-514.
- Welsh, A.** and Jackson, J.R. (2014) The effect of multi-year versus single-year stocking on lake sturgeon genetic diversity. *Journal of Applied Ichthyology* 30: 1524-1530.
- Welsh, A.** (2014) Genetic considerations in the restoration of small forest populations: perspectives from fish and wildlife genetics. *Journal of Sustainable Forestry* 33: s66-s92.
- Questel, J., Walsh, M., Smith, Jr., R., and **Welsh, A.** (2012) New data on mitochondrial diversity and origin of *Hemimysis anomala* in the Laurentian Great Lakes. *Journal of Great Lakes Research* 38: 14-18.
- Welsh, A.B.** and Mohamed, K.I. (2011) Genetic diversity of *Striga hermonthica* populations in Ethiopia: evaluating the role of geography and host specificity in shaping population structure. *International Journal of Plant Sciences* 172: 773-782.
- Brooking, T., Rudstam, L.G., Krueger, S.D., Jackson, J.R., **Welsh, A.B.**, and Fetzer, W.W. (2010) First occurrence of the mysid *Hemimysis anomala* in an inland lake in North America, Oneida Lake, NY. *Journal of Great Lakes Research* 36: 577-581.
- Welsh, A.** and McLeod, D. (2010) Detection of natural barriers to lake sturgeon (*Acipenser fulvescens*) movement within the Namakan River, Ontario. *Canadian Journal of Zoology* 88: 390-397.
- Welsh, A.**, Hill, T., Quinlan, H., Robinson, C. and May, B. (2008) Genetic assessment of lake sturgeon population structure in the Laurentian Great Lakes. *North American Journal of Fisheries Management* 28: 572-591.
- Baerwald, M.B., **Welsh, A.B.**, Hedrick, R.P., and May, B. (2008) Discovery of genes implicated in whirling disease infection and resistance in rainbow trout using genome-wide expression profiling. *BMC Genomics* 9:37.
- Welsh, A.** and May, B. (2006) Development and standardization of disomic microsatellite markers for lake sturgeon genetic studies. *Journal of Applied Ichthyology* 22: 337-344.
- Welsh, A.** (2004) Factors influencing the effectiveness of local versus national protection of migratory species: a case study of lake sturgeon in the Great Lakes, North America. *Environmental Science and Policy* 7(4): 315-328.
- Welsh, A.**, Blumberg, M., & May, B. (2003) Identification of microsatellite loci in lake sturgeon, *Acipenser fulvescens*, and their variability in green sturgeon, *A. medirostris*. *Molecular Ecology Notes* 3(1): 47-55.
- Thomas, M., Sing, H., Belenky, G., Holcomb, H., Mayberg, H., Dannals, R., Wagner, Jr., H., Thorne, D., Popp, K., Rowland, L., **Welsh, A.**, Balwinski, S. & Redmond, D. (2003) Neural basis of alertness

and cognitive performance impairments during sleepiness. II. Effects of 48 and 72 h of sleep deprivation on waking human regional brain activity. *Thalamus and Related Systems* 2(3): 199-229.

Thomas, M., Sing, H., Belenky, G., Holcomb, H., Mayberg, H., Dannals, R., Wagner, Jr., H., Thorne, D., Popp, K., Rowland, L., **Welsh, A.**, Balwinski, S. & Redmond, D. (2000) Neural basis of alertness and cognitive performance impairments during sleepiness. I. Effects of 24 hours of sleep deprivation on waking human regional brain activity. *Journal of Sleep Research* 9(4): 335-352.

Other Peer-Reviewed Products:

Welsh, A., Jerde, C., Wilson, C., Docker, M., and Locke, B. (2019) Uses and limitations of environmental DNA (eDNA) in fisheries management. <http://www.glfsc.org/science-transfer-toolkit.php>

Welsh, A. (2013) Recognizing the genetic population structure of lake sturgeon. In: N. Auer & D. Dempsey (eds) *The Great Lake Sturgeon*. Michigan State University Press, Michigan, pp. 79-92.

Welsh, A.B., Elliott, R.F., Scribner, K.T., Quinlan, H.R., Baker, E.A., Eggold, B.T., Holtgren, J.M., Krueger, C.C., May, B. (2010) Genetic guidelines for the stocking of lake sturgeon (*Acipenser fulvescens*) in the Great Lakes basin. Great Lakes Fishery Commission Miscellaneous Publication 2010-01.

COMPETITIVE GRANTS & FELLOWSHIPS

Competitive Grants Funded:

Hawkins, J.S., Welsh, A.B., and Percifield, R.J. (2021-2024) Acquisition of an ABI 3500xL Genetic Analyzer for the WVU Genomics Core Facility. NSF Major Research Instrumentation Grant - \$271,188

Larson, W., Welsh, A., Scribner, K., and Bernatchez, L. (2019-2020) Developing a high-throughput marker panel for lake sturgeon to standardize analyses across the Great Lakes. Great Lakes Fish and Wildlife Restoration Act - \$115,477

Welsh, S., Welsh, A., and Strager, J. (2017-2020) Genetic and landscape level threat assessments and status review of the candy darter (*Etheostoma osburni*). U.S. Fish and Wildlife Service - \$71,102

Welsh, A., Jerde, C., Wilson, C., Lodge, D., Locke, B., and Docker, M. (2017-2019) Uses and limitations of environmental DNA (eDNA) in fisheries management. Great Lakes Fishery Commission - \$30,419

Welsh, A., Bernatchez, L., and King, T. (2015-2019) Management unit delineation of lake sturgeon populations based on adaptive genetic diversity. Great Lakes Fishery Trust - \$193,942

Welsh, A., and Wood, D. (2015-2018) Development of a white-tailed deer genetic database for the forensic identification of poached individuals. U.S. Department of Justice - \$150,000

Welsh, A. (2014-2017) Landscape genetics of white-tailed deer in West Virginia. West Virginia Division of Natural Resources - \$175,477

Anderson, J. and Welsh, A. (2014-2018) Population study of bobcats in West Virginia. West Virginia Division of Natural Resources - \$268,600

Welsh, A. (2014-2015) Genomic analysis of a freshwater mussel *Actinonaias ligamentina*. WVU ADVANCE Center - \$15,000

Welsh, A. (2014-2015) Genomic differences between urban and rural hawks. Daniel C. & Elizabeth D. Brown Faculty Development Fund - \$10,000

Welsh, A., Katzner, T., and Anderson, J. (2013-2018) Distribution, differentiation, and hybridization of king and clapper rails in eastern VA. U.S. Fish and Wildlife Service - \$419,368

Welsh, A. (2013-2014) Mitogenomic analysis of the phylogenetic relationships among North American sturgeon. WVU ADVANCE Center - \$15,000

Welsh, A. (2012-2014) Genetic study of lake sturgeon in the St. Clair-Detroit River system. USGS - \$65,000

- Welsh, A. (2012-2013) Lake sturgeon migratory genomics. WVU ADVANCE Center - \$15,000
- Welsh, A. and Petty, J.T. (2012-2013) Effects of culverts on the genetic diversity of brook trout. WVU Faculty Senate Research Grant - \$18,880
- Welsh, A., Walsh, M., Stott, W., Scribner, K., Connerton, M., Keir, M., and Hoyle, J. (2010-2012) Evaluating genetic relationships between the Lake Ontario deepwater sculpin population and upper Great Lakes populations. Great Lakes Fishery Commission - \$62,822
- Welsh, A., Back, R., Bowen, K., Schaner, T. & Walsh, M. (2009-2010) Tracing the invasion pathway of *Hemimysis anomala* into Lake Ontario and beyond. Great Lakes Protection Fund (through the Great Lakes Research Consortium) - \$6,120
- Mohamed, K. & Welsh, A. (2008) Genetic diversity of *Striga hermonthica* populations in Ethiopia. Scholarly and Creative Activities Committee, SUNY-Oswego - \$2,750
- Welsh, A. & Sloss, B. (2008-2010) A comparison of genetic diversity at the major histocompatibility complex in hatchery-produced and wild lake sturgeon. Great Lakes Fishery Commission - \$10,000
- Welsh, A., Scribner, K., Boase, J., Elliott, R., Quinlan, H., Thomas, M., Mohr, L., Baker, E., Donofrio, M. & Lenart, S. (2007-2009) Genetic identification of non-spawning lake sturgeon in the Great Lakes. Great Lakes Fishery Trust - \$170,871
- Welsh, A., Rosenbaum, P., Pursel, K., & Volny, M. (2007-2008) Ecological genetics of two native New York species. SUNY-Oswego Student Faculty Collaborative Challenge Grant - \$2,500
- May, B., Welsh, A., Hill, T., Haas, R., Bruch, R., Krueger, C. (2004-2008) Development of genetic management guidelines for lake sturgeon. Great Lakes Fish and Wildlife Restoration Act - \$84,600
- May, B. & Welsh, A. (2005-2008) Assessment of the population genetic structure of lake sturgeon. Great Lakes Fishery Commission - \$79,681

Fellowships:

- University of California – Davis Dissertation Year Fellowship (2005-2006) – Stipend, tuition, \$500 research funds, \$500 travel funds
- James Wright Scholarship – American Fisheries Society (2004) – Travel funds to national meeting
- University of California Graduate Student Travel Award (2004) – \$1000 travel funds to attend World Fisheries Congress
- Jastro Shields Research Award (2003, 2004) – \$4000 research funds
- Hart, Cole, Goss Fellowship (2002-2004) – Summer stipend for each year
- University of California – Davis Block Grant Fellowship (2001-2005) – Stipend and tuition

CONTRACTED PROJECTS

- Welsh, A. (2022-2025) Sex determination and sex ratios of Lake Superior lake sturgeon. U.S. Fish and Wildlife Service - \$142,246
- Welsh, A. (2022-2024) West Virginia river otter genetic analysis of population structure and diet composition. West Virginia Division of Natural Resources - \$53,646
- Welsh, A. (2021-2025) Genetic analysis of West Virginia game fishes. West Virginia Division of Natural Resources - \$241,552
- Welsh, A. (2021-2025) Candy darter genetic screening. West Virginia Division of Natural Resources - \$190,000
- Welsh, A. (2020-2022) Source population assignment of Lake Superior lake sturgeon. U.S. Fish and Wildlife Service - \$119,062
- Welsh, A. (2020-2021) Screening of microsatellite loci for shortnose sturgeon. South Carolina Department of Natural Resources - \$39,028
- Welsh, A. (2019-2023) Genetic analysis of West Virginia fishes. West Virginia Division of Natural Resources - \$350,000

- Welsh, A. (2019-2022) Parentage analysis of stocked and wild-caught lake sturgeon in Lake Superior. U.S. Fish and Wildlife Service - \$186,883
- Welsh, A. (2018-2021) Genetic analysis of fisher populations. West Virginia Division of Natural Resources - \$41,443
- Edwards, J., Owen, S., and Welsh, A. (2017-2021) Correlates of tick abundance and strategies to reduce lyme disease transmission on Fort Drum Military Installation. U.S. Army Corps of Engineers - \$498,550
- Welsh, A. (2017-2019) Genetic assessment of lake sturgeon in Ontario. Anishinabek/Ontario Fisheries Resource Center - \$11,437
- Welsh, A. (2013-2018) Source population assignment of Lake Superior lake sturgeon. U.S. Fish and Wildlife Service - \$310,590
- Welsh, A. (2010-2012) Genetic investigation of downstream passage by lake sturgeon at a generating station on the Winnipeg River. University of New Brunswick - \$30,000
- Welsh, A. (2009-2011) Genetic assessment of the hatchery-produced lake sturgeon population in the Oswego River basin. New York State Department of Environmental Conservation - \$42,102
- Welsh, A. (2007-2008) Population structure of lake sturgeon within the Namakan River, Ontario. Ontario Ministry of Natural Resources - \$14,203

PRESENTATIONS & ABSTRACTS

Invited Oral Presentations:

- Welsh, A.** (2021) Conservation genomics: moving from genotype to phenotype to management. WVU Davis College Research Seminar, Morgantown, WV
- Welsh, A.** (2020) The intersection between conservation genomics and policy: are the waters getting muddier? Clemson University Seminar Series, online due to COVID-19
- Welsh, A.** (2019) Wildlife CSI: the use of DNA in the forensic investigation of wildlife crime. WVU Entomology Program Seminar Series, Morgantown, WV
- Welsh, A., Jerde, C., Wilson, C., Docker, M., and Locke, B.** (2019) The uses and limitations of environmental DNA. Council of Lake Committees meeting, Great Lakes Fishery Commission, Detroit, MI
- Welsh, A.** (2019) The intersection between conservation genomics and policy: are the waters getting muddier? WVU Division of Plant and Soil Sciences Seminar Series, Morgantown, WV
- Welsh, A.** (2017) Candy darters and listing under the Endangered Species Act. WVU Chapter of the Society for Conservation Biology, Morgantown, WV
- Welsh, A.** (2017) Genetic stocking considerations. Lake Erie Lake Sturgeon Working Group, Buffalo, NY
- Welsh, A.** (2015) Genetic considerations in the ethics of aquaculture. American Fisheries Society meeting, Portland, OR
- Welsh, A.** (2015) The use of population genetics to inform species conservation: a case study of lake sturgeon in the Great Lakes. Natural Resources and the Environment Seminar Series, University of Connecticut
- Welsh, A. and Quinlan, H.** (2014) Homebodies or roamers? Genetic assignment of lake sturgeon in Lake Superior. American Fisheries Society meeting, Quebec City, QC
- Welsh, A.** (2014) The use of population genetics to inform management: a case study of lake sturgeon in the Great Lakes. Ecology and Evolutionary Biology Seminar Series at Virginia Tech
- Welsh, A.** (2013) Creating genetic management plans in the face of uncertainty: a case study of lake sturgeon in the Great Lakes. American Fisheries Society, Little Rock, AR
- Welsh, A., Scribner, K., Stott, W., and Walsh, M.** (2012) Genetic identification of the origin of the Lake Ontario deepwater sculpin population. American Fisheries Society meeting, St. Paul, MN.

- Welsh, A.,** Scribner, K., Elliott, R., Quinlan, H., Baker, E., Eggold, B., Holtgren, J.M., Krueger, C., and May, B. (2010) Population genetic structure of lake sturgeon in the Great Lakes and its implications for management. Lake Sturgeon Research and Recovery Workshop, Winnipeg, MB, Canada.
- Welsh, A.,** Scribner, K., Elliott, R., Quinlan, H., and May, B. (2009) Lake sturgeon population genetics. Great Lakes Fishery Commission Lake Committee Meeting, Ypsilanti, MI.
- Welsh, A.** (2009) The use of population genetics for the conservation of lake sturgeon in the Great Lakes. Aquabreak seminar series, SUNY- Environmental School of Forestry.
- Welsh, A.,** Quinlan, H., Mohr, L., and May, B. (2008) Genetic assignment of lake sturgeon in Lake Superior and Lake Huron. American Fisheries Society, Ottawa, ON.
- Welsh, A.** (2008) Lake sturgeon conservation genetics: not just another fish tale. Science Today talk series, SUNY-Oswego.
- Welsh, A.** (2008) Conservation genetics: undergraduate research that makes a difference. Sigma Xi dinner, SUNY-Oswego.
- Welsh, A.,** DeHaan, P., Scribner, K., Elliott, R. (presenter), Krueger, C., Quinlan, H., & May, B. (2007) Genetic structuring of remnant populations and related conservation and stocking guidelines. Great Lakes Fishery Commission Lake Committee Meetings, Ypsilanti, MI.
- Welsh, A. & B. May** (2004) Standardization of microsatellite loci in lake sturgeon. American Fisheries Society, Madison, WI.

Oral Presentations:

- Welsh, A.,** Akers, M., and Quinlan, H. (2022) Genomic evaluation of lake sturgeon stocking in Lake Superior. American Fisheries Society meeting, Spokane, WA
- Welsh, A.,** Bernatchez, S., Normandeau, E., and Bernatchez, L. (2018) What the age of genomics means for lake sturgeon management. Great Lakes Lake Sturgeon Coordination Meeting, Port Huron, MI
- Welsh, A.,** Whitaker, J., Price, L., and Boase, J. (2018) Genomics and fine-scale population structure in lake sturgeon. North American Sturgeon and Paddlefish Society conference, Columbia, MO
- Welsh, A.,** Bernatchez, S., Normandeau, E., and Bernatchez, L. (2017) Defining management units in the age of genomics. International Sturgeon Symposium, Vienna, Austria.
- Welsh, A.,** Wood, D., and Carlson, D. (2015) The potential of migration to replenish a genetically depauperate population: a case study of lake sturgeon on the Grasse River. Ecological Society of America meeting, Baltimore, MD
- Schreier, A. (presenter), **Welsh, A.,** and May, B. (2013) Improving sturgeon management and conservation with genetic management plans: case studies from both coasts. Western division of the American Fisheries Society.
- McDougall, C. (presenter), **Welsh, A.,** Peake, S.J., and Anderson, G. (2013) An inter-reservoir contribution of lake sturgeon: unforeseen consequences of survived downstream passage? International Sturgeon Symposium, Nanaimo, BC.
- Welsh, A.** and Jackson, J.R. (2013) The effect of multi-year versus single-year stocking on lake sturgeon genetic diversity. International Sturgeon Symposium, Nanaimo, BC.
- Welsh, A.,** Jackson, J.R., and Sloss, B. (2012) Effects of stocking on the genetic diversity of lake sturgeon. Great Lakes Lake Sturgeon Coordination Meeting, Sault Ste. Marie, MI.
- Welsh, A.,** Scribner, K., Walsh, M., and Stott, W. (2012) Genetic identification of the origin of the Lake Ontario deepwater sculpin population. Northeast Association of Fish and Wildlife Agencies meeting, Charleston, WV.
- Welsh, A.,** Questel, J., Smith, R., Walsh, M., Bowen, K., and Schaner, T. (2010) Genetic determination of the invasion pathway of *Hemimysis anomala* throughout the Great Lakes. International Association of Great Lakes Research Meeting, Toronto, ON, Canada.
- Welsh, A.** (2009) Human-induced evolutionary changes in lake sturgeon. Darwin 200 event, SUNY-Oswego.

- Welsh, A.**, Baerwald, M., Friday, M., and May, B. (2008) Hydropower facilities and sustainable sturgeon: a conservation genetic approach to understanding lake sturgeon on the Kaministiquia River. American Fisheries Society, Ottawa, ON.
- Welsh, A.B.** & Sloss, B. (2007) Proposal to study the effects of lake sturgeon mating strategies on the maintenance of genetic diversity at the major histocompatibility complex. Board of Technical Experts for the Great Lakes Fishery Commission, Ann Arbor, MI.
- Welsh, A.B.***, Elliott, R., Krueger, C., Quinlan, H., & May, B. (2006) Development of lake sturgeon genetic stocking guidelines. Great Lakes Lake Sturgeon Coordination Meeting, Sault Ste. Marie, MI.
***Also participated as a panelist.**
- Bott, K., Scribner, K. (presenter), Elliott, R., Ragavendran, A., Rosa, G., and **Welsh, A.** (2006) Genetic assignment of open water stocks to rivers of origin and comparative analyses of recruitment in lake sturgeon. Great Lakes Lake Sturgeon Coordination Meeting, Sault Ste. Marie, MI.
- Welsh, A.B.**; C. Krueger, & B. May (2006) Development of genetic stocking guidelines for conservation of lake sturgeon in the Great Lakes. American Fisheries Society meeting, Lake Placid, NY.
- Baerwald, M.R. (presenter), **Welsh, A.B.**, Hedrick, R.P., & May, B. (2006) Discovering genes associated with whirling disease resistance using microarray analysis. American Fisheries Society meeting, Lake Placid, NY.
- Welsh, A.B.**; C. Krueger, & B. May (2006) Genetic stocking guidelines for lake sturgeon conservation in the Great Lakes. Society for Conservation Biology meeting, San Jose, CA.
- Welsh, A.B.** (2005) Lake sturgeon conservation in the Great Lakes: scaling it up from genetics to policy. Animal Science Seminar Series, University of California-Davis.
- Welsh, A.B.**; T. Hill, & B. May (2005) Population genetic structure of lake sturgeon in the Great Lakes and implications for management. American Fisheries Society meeting, Anchorage, AK.
- Welsh, A.**; T. Hill, P. DeHaan, K. Scribner, & B. May (2004) Spatial population genetic diversity of lake sturgeon throughout the Great Lakes. Great Lakes Lake Sturgeon Coordination Meeting, Sault Ste. Marie, MI.
- Welsh, A.** (2004) Effectiveness of state management of migratory species: a case study. World Fisheries Congress, Vancouver, BC.
- Welsh, A.**; T. Hill & B. May (2002) Development of a lake sturgeon management plan: Status of molecular markers and sampling. Great Lakes Lake Sturgeon Coordination Meeting, Sault Ste. Marie, MI.
- Welsh, A.**; M. Blumberg, C. Lowie & B. May (2002) Standardization of microsatellite markers for lake sturgeon, *Acipenser fulvescens*. American Fisheries Society, Baltimore, MD.

Poster Presentations:

- Baerwald, M.R.; R. Hedrick, **A. Welsh**, & B. May (2005) Identifying genes associated with whirling disease resistance in rainbow trout using microarray analysis. American Fisheries Society meeting, Anchorage, AK.
- Welsh, A.** & B. May (2004) Patterns of population genetic diversity in lake sturgeon of the Great Lakes. American Fisheries Society, Madison, WI.
- Welsh, A.** & B. May (2003) Potential role of genome duplication to impede gene pool erosion in sturgeon of the genus *Acipenser*. American Fisheries Society, Quebec City, QC.
- Welsh, A.**; N. Jimerson, D. Herman, S. Kodsi, M. Holland & T. Parsons (2000) Implementation of a 96-well high-throughput method for mitochondrial DNA databasing. International Symposium on Human Identification, Biloxi, MS.
- Jones, S.; J. Irwin-Ross, F. Love, **A. Welsh**, M. Holland & T. Parsons (1999) Development of an efficient, high-throughput strategy for sequence analysis of the entire human mitochondrial DNA control region. 10th International Symposium on Human Identification.

Welsh, A.; M. Thomas, D. Thorne, H. Sing, L. Rowland, D. Redmond, R. Peters, E. Wagner & G. Belenky (1998) Effects of 64 hours of sleep deprivation on accidents and sleep events during a driving simulator test. *Sleep* 21(Suppl. 3): 234.

Advised Student/Post-doc/Technician Presentations:

Oral –

- Busch, C., Lubinski, B., Fox, D., Breece, M., **Welsh, A.**, and Kazyak, D. (2023) Genetic assignment of coastal Delaware Atlantic sturgeon mixed stock assemblage. Southern Division of the American Fisheries Society, Norfolk, VA
- Johnson, A., Zipfel, K., and **Welsh, A.** (2022) Where are the native walleye? An assessment of native and introduced strains in West Virginia. American Fisheries Society meeting, Spokane, WA and Southeast Association of Fish and Wildlife Agencies, Charleston, WV
- Schumacher, L., Driehaus, E., Quinlan, H., and Welsh, A. (2022) Genetic determination of sex ratios for spawning lake sturgeon within Lake Superior's tributaries. North American Sturgeon and Paddlefish Society, Folsom, CA
- Schwinghamer, C., **Welsh, A.**, and Hartman, K. (2022) Genetic predictors of population resilience in headwater brook trout populations. American Fisheries Society meeting, Spokane, WA
- Akers, M., Quinlan, H., and **Welsh, A.** (2021) A genetic snapshot of stocking: the Ontonagon River lake sturgeon project. American Fisheries Society meeting, Baltimore, MD
- Johnson, A., Zipfel, K., and **Welsh, A.** (2021) What have we been stocking all these years? A genomic characterization of walleye strains in West Virginia. American Fisheries Society meeting, Baltimore, MD
- Akers, M., Quinlan, H., and **Welsh, A.** (2020) Lake sturgeon: estimating spawner numbers from larval drift. North American Sturgeon and Paddlefish Society meeting, online due to COVID-19
- Kessinger, B., Welsh, S., and **Welsh, A.** (2020) (**Invited**) West Virginia Candy Darter population genetics and genetics of the reintroduced Candy Darter populations. WVDNR Candy Darter Coordination Meeting, Elkins, WV
- Kessinger, B., Welsh, S., and **Welsh, A.** (2020) (**Invited**) West Virginia Candy Darter population genetics and genetics of the reintroduced Candy Darter populations. WV/VA Candy Darter Coordination Meeting, online due to COVID-19
- Price, L., Edwards, J., Owen, S., Rainbolt, R., and **Welsh, A.** (2020) Following the blood trail: identifying bloodmeal sources of black-legged ticks (*Ixodes scapularis*) utilizing next-generation sequencing. 76th Annual Northeast Fish and Wildlife Conference (conference canceled due to COVID-19)
- Price, L., Edwards, J., Owen, S., Rainbolt, R., and **Welsh, A.** (2020) Following the blood trail: identifying bloodmeal sources of black-legged ticks (*Ixodes scapularis*) utilizing next-generation sequencing. The Wildlife Society Annual Conference, online due to COVID-19
- Halley, Y., Williams, M., **Welsh, A.**, and Anderson, J. (2019) A quantitative PCR assay for measuring spotted salamander abundance. American Fisheries Society/The Wildlife Society Joint Annual Meeting, Reno, NV
- Kessinger, B., **Welsh, A.**, Welsh, S., and Cincotta, D. (2019) Population genetic structure of the endangered candy darter in West Virginia and implications for management. WV/VA American Fisheries Society meeting, Blacksburg, VA
- Kessinger, B., **Welsh, A.**, Welsh, S., and Cincotta, D. (2019) Population genetic structure of the endangered candy darter in West Virginia and implications for management. Northeast Association of Fish and Wildlife Agencies, Groton, CT
- Kessinger, B., **Welsh, A.**, Welsh, S., and Cincotta, D. (2019) Population genetics and conservation units of the endangered candy darter. American Fisheries Society/The Wildlife Society Joint Annual Meeting, Reno, NV
- Halley, Y., Merriam, E., **Welsh, A.**, Petty, J.T., and Anderson, J. (2018) Analyzing Appalachian headwater stream fish communities utilizing eDNA metabarcoding. American Fisheries Society, Atlantic City, NJ.

- Nathan, L., **Welsh, A.**, and Vokoun, J. (2018) Genetic structuring among headwater brook trout streams: a riverscape genetics modeling application. American Fisheries Society, Atlantic City, NJ.
- Nathan, L., **Welsh, A.**, and Vokoun, J. (2018) Identifying brook trout conservation opportunity areas using the EBTJV patch layer. American Fisheries Society, Atlantic City, NJ.
- Owers, A.R., Rounselle Jr., T.F., **Welsh, A.B.**, Rogers, R.E., Ryan, C.W., and Anderson, J.T. (2017) Evaluating population genetics and movement patterns of West Virginia's bobcats. Northeast Association of Fish and Wildlife Agencies, Norfolk, VA.
- Rounselle Jr., T.F., **Welsh, A.B.**, Rogers, R.E., Ryan, C.W., and Anderson, J.T. (2017) Utility of next-generation sequencing for noninvasive hair snare surveys. Northeast Association of Fish and Wildlife Agencies, Norfolk, VA.
- Schumacher, L., **Welsh, A.**, and Quinlan, H. (2017) Genetic assessment of lake sturgeon stocking in the St. Louis River. International Sturgeon Symposium, Vienna, Austria.
- Wood, D., **Welsh, A.**, Crum, J., and Ryan, C. (2017) Identifying white-tailed deer genetic neighborhoods at a fine scale. Northeast Association of Fish and Wildlife Agencies, Norfolk, VA. Also presented at the Davis College Student Research & Creative Day and the WV State meeting of The Wildlife Society.
- Wood, D., **Welsh, A.**, Crum, J., and Ryan, C. (2017) The poor get richer? Spatial and temporal analysis of genotypes associated with the progression of chronic wasting disease. The Wildlife Society, Albuquerque, NM.
- Belcher, K.M., Landry, S.M., Garza, J.J., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Zoonotic parasites in West Virginia bobcat population. The Wildlife Society conference, Raleigh, NC
- Coster, S., **Welsh, A.B.**, Costanzo, G., Cooper, J., Harding, S., Anderson, J.T., and Katzner, T.E. (2016) Birds of a feather flock together? Investigating population structure and introgression in the king-clapper rail complex. York River Research Symposium, Gloucester Point, VA
- Coster, S., **Welsh, A.B.**, Costanzo, G., Cooper, J., Harding, S., Anderson, J.T., and Katzner, T.E. (2016) Birds of a feather flock together? Investigating population structure and introgression in the king-clapper rail complex. Northeast Association of Fish & Wildlife Agencies Annual Meeting, Annapolis, MD
- Frantz, M. W., Welsh, A., Latta, S., and Wood, P. (2016) Epigenetic (DNA methylation) variation in the Louisiana Waterthrush (*Parkesia motacilla*) associated to shale gas development in West Virginia. Eastern Bird Banding Association (EBBA) Annual Meeting, Davis, WV
- Gibson, I., **Welsh, A.B.**, Welsh, S.A., and Cincotta, D.A. (2016) Using microsatellite loci to identify Candy and Variegated darter hybrids. Southern Division American Fisheries Society meeting, Wheeling, WV
- Jensen, M.K., Millsap, B.A., Katzner, T.E., and **Welsh, A.B.** (2016) Genomic adaptation of Cooper's hawks to urban environments. North American Ornithological Conference, Washington, DC
- Jensen, M.K., **Welsh, A.B.**, Brinker, D.F., Manske, M., and Katzner, T.E. (2016) High heterozygosity and limited structure in the fragmented Northern Goshawk (*Accipiter gentilis*) population of the eastern U.S. Raptor Research Foundation annual conference, Cape May, NJ
- Landry, S.M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Bottom of the ninth life: reevaluating population dynamics of West Virginia bobcats using age-at-harvest data. The Wildlife Society conference, Raleigh, NC
- Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Demographic estimates of an exploited bobcat (*Lynx rufus*) population in West Virginia. XVI Nordic Congress of Wildlife Research conference, Rovaniemi, Finland.
- Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Estimating demographics of West Virginia bobcats. Northeastern Association of Fish and Wildlife Agencies annual meeting, Annapolis, MD
- Nathan, L. R., **Welsh, A.**, Vokoun, J. (2016) Using riverscape genetics to inform conservation of Eastern Brook Trout populations. American Fisheries Society Annual Meeting, Kansas City, MO

- Nathan, L. R., Smith, A., **Welsh, A.**, Vokoun, J. (2016) Evaluating the effects of culverts on fine scale genetic structuring of Brook Trout. Southern New England Chapter American Fisheries Society Meeting, Providence, RI. **Awarded Best Student Presentation**
- Nathan, L. R., **Welsh, A.**, Vokoun, J. (2016) A landscape genetics approach to assessing Brook Trout population connectivity at the watershed scale. Northeast Fish and Wildlife Conference, Annapolis, MD
- Rounsville, T. F., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Revisiting non-invasive hair snares for bobcats. Northeast Association of Fish & Wildlife Agencies Annual Conference, Annapolis, MD
- Rounsville, T. F., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) The next generation of non-invasive hair snare surveys. The Wildlife Society Annual Conference, Raleigh, NC
- Whitaker J.M., **Welsh, A.B.**, Hondorp, D., Boase, J., and King, T. (2016) Migratory genomics of lake sturgeon, Southern Division of the American Fisheries Society. Wheeling, WV
- Wood, D.M., and **Welsh, A.B.** (2016) Fine-scale dispersal of white-tailed deer: implications for chronic wasting disease. The Wildlife Society Annual Conference, Raleigh, NC
- Wood, D.M., **Welsh, A.B.**, and Petty, J.T. (2016) Restoring the connection between brook trout within an Appalachian watershed. Northeast Association of Fish and Wildlife Agencies, Annapolis, MD
- Wood, D.M., **Welsh, A.B.**, and Petty, J.T. (2016) Restoring the connection between brook trout within an Appalachian watershed. Annual meeting of the Southern Division of the American Fisheries Society, Wheeling, WV
- Coster, S., **Welsh, A.B.**, Costanzo, G., Cooper, J., Harding, S., Anderson, J.T., and Katzner, T.E. (2015) Birds of a feather flock together? Investigating introgression in the king-clapper rail complex. Southeast Partners in Flight meeting, Lafayette, LA
- Frantz, M.W., Wood, P.B., Sheehan, J., George, G., **Welsh, A.**, and Latta, S. (2015) Response of Louisiana Waterthrush to shale gas development. Ecological Society of America meeting, Baltimore, MD
- Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) West Virginia bobcat population ecology: determining survival, reproductive success, and population health. West Virginia Trappers Association annual convention, Glenville, WV
- Nathan, L.R., **Welsh, A.**, and Vokoun, J. (2015) Delineation of brook trout landscape-level genetic structure among headwater stream networks: isolates or meta-populations? Southern New England Chapter of the American Fisheries Society meeting, Dartmouth, MA (**Awarded Best Student Presentation**)
- Rounsville, T.F., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) An effective new tool for bobcat capture-recapture surveys. The Wildlife Society conference, Winnipeg, Manitoba.
- Rounsville, T.F., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) West Virginia bobcat population study 2014-2015 update. West Virginia Trappers Association annual convention, Glenville, WV
- Whitaker, J., **Welsh, A.**, Hondorp, D., Boase, J., Merovich, G., and Welsh, S. (2015) Characterizing the migratory phenotype of lake sturgeon. Southeastern Association of Fish and Wildlife Agencies, Asheville, NC
- Whitaker, J., **Welsh, A.**, Hondorp, D., Boase, J., Merovich, G., and Welsh, S. (2015) Characterizing the migratory phenotype of lake sturgeon. Ecological Society of America, Baltimore, MD
- Whitaker, J., **Welsh, A.**, and King, T. (2014) Refining management units through genomics. American Fisheries Society meeting, Quebec City, QC
- Wood, D., and **Welsh, A.** (2014) Lake sturgeon on the move? Identification of lake sturgeon migrants into a genetically deficient area. American Fisheries Society meeting, Quebec City, QC
- Wood, D. and **Welsh, A.** (2014) Restoring the connection between brook trout populations within an Appalachian Watershed. American Fisheries Society meeting, Quebec City, QC
- Wood, D. and **Welsh, A.** (2013) The effects of culverts on brook trout genetic diversity. American Fisheries Society, Little Rock, AR

Questel, J., Back, R., and **Welsh, A.** (2008) Genetic Determination of the Origin of *Hemimysis anomala* in Lake Ontario. International Association of Great Lakes Research, Peterborough, ON.

Poster -

- Halley, Y., **Welsh, A.**, and Anderson, J. (2019) A protocol for nondestructive genetic sampling of amphibian and fish species. American Fisheries Society/The Wildlife Society Joint Annual Meeting, Reno, NV
- Harms, C., **Welsh, A.**, Rogers, R., and Ryan, C. (2019) Genetic structure of a reintroduced fisher population in West Virginia. American Fisheries Society/The Wildlife Society Joint Annual Meeting, Reno, NV
- Price, L.E., **Welsh, A.B.**, Rainbolt, R.E., Owen, S.F., and Edwards, J.W. (2018) Tick blood meal sources and reservoirs of Lyme disease at Fort Drum, New York. The Wildlife Society conference, Cleveland, OH
- Bland, J., Coster, S., Schumacher, L., and **Welsh, A.** (2017) Sex determination of two rail species using molecular techniques. West Virginia University Undergraduate Spring Symposium, Morgantown, WV.
- Halley, Y.A., Merriam, E.R., **Welsh, A.B.**, Petty, J.T., and Anderson, J.T. (2017) Using Environmental DNA to Assess Hellbender Populations in West Virginia. West Virginia Academy of Science, Glenville, WV.
- Halley, Y.A., Merriam, E.R., **Welsh, A.B.**, Petty, J.T., and Anderson, J.T. (2017) Using Environmental DNA to Assess Species Composition in Appalachian Headwater Streams. Joint Meeting of Ichthyologists and Herpetologists, Austin, TX. Also presented at the Institute of Water Security and Science Spring Symposium, Morgantown, WV, and Mid-Atlantic Water Resources Conference, Shepherdstown, WV.
- Plum, T., Schumacher, L., Wood, D., Rounselle, T., and **Welsh, A.** (2017) Temporal genetics of lake sturgeon in the Mississippi River, Ontario. American Fisheries Society, Tampa, FL.
- Rounselle Jr., T.F., Huffman, J.E., Aldras, A.A., and **Welsh, A.B.** (2017) Development of a rapid presumptive field test for white-tailed deer blood. Davis College Graduate Research & Creative Scholarship Day, Morgantown, WV.
- Rounselle Jr., T.F., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2017) Modeling bobcat occupancy in West Virginia at the landscape scale. The Wildlife Society, Albuquerque, NM.
- Wood, D. and **Welsh, A.** (2017) Environmental and temporal variables contribute to DNA degradation in white-tailed deer blood. Society for Wildlife Forensic Science, Edinburgh, Scotland.
- Belcher, K. M., Landry, S.M., Garza, J.J., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) West Virginia bobcats: host of zoonotic parasites. Northeastern Association of Fish and Wildlife Agencies Annual Meeting, Annapolis, MD
- Harris, S.K., Wood, D.M., and **Welsh, A.B.** (2016) White-tailed deer in a natural jail? How natural landscape characteristics may affect movement. The Wildlife Society annual conference, Raleigh, NC
- Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Bobcat demography in West Virginia. West Virginia Academy of Science annual meeting, Huntington, WV. **Awarded Honorable Mention for Graduate Student Poster Presentations.**
- Roof, J. E., Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Wintering diet of West Virginia bobcats. Northeastern Association of Fish and Wildlife Agencies Annual Meeting, Annapolis, MD
- Roof, J.E., Landry, S.M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2016) Winter diet of West Virginia bobcats. The Wildlife Society conference, Raleigh, NC
- Coster, S., **Welsh, A.B.**, Anderson, J.T., Harding, S., and Katzner, T.E. (2015) Using genetic methods to investigate hybridization, residency and epigenetics in the king-clapper rail complex. Ecological Society of America Annual Meeting, Baltimore, MD

- Jensen, M.K., Hamburg, S., **Welsh, A.B.**, and Katzner, T.E. (2015) An improved mechanical owl for capture of nesting Accipiter hawks. Annual Raptor Research Foundation conference, Sacramento, CA
- Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) Bobcat (*Lynx rufus*) population ecology in West Virginia. Maryland-Delaware Chapter of The Wildlife Society annual spring meeting, Grantsville, MD. **Awarded First Place Graduate Student Poster.**
- Landry, S. M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) West Virginia bobcat population ecology. West Virginia Chapter of The Wildlife Society annual meeting, Elkins, WV
- Landry, S.M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) Bobcat (*Lynx rufus*) population ecology in West Virginia. MD/DE Wildlife Society meeting.
- Landry, S.M., Rogers, R.E., **Welsh, A.B.**, Ryan, C.W., and Anderson, J.T. (2015) West Virginia bobcat population ecology. WV Wildlife Society meeting.
- Nathan, L.R., **Welsh, A.**, and Vokoun, J. (2015) Using genetics and cost-distance modeling to uncover stream network features that structure brook trout populations. Northeast Fish and Wildlife Agencies conference, Newport, RI
- Stiffler, L. L., J. T. Anderson, T. E. Katzner, **A. B. Welsh**, S. Harding, J. Cooper, G. Costanzo. (2015) Success of autonomous recording units (ARUs) in detecting king and clapper rails. Southeastern Partners in Flight Annual Meeting, Lafayette, LA.
- Wood, D.M. and **Welsh, A.B.** (2015) Regional population genetics of white-tailed deer in West Virginia. The Wildlife Society meeting, Winnipeg, Manitoba
- Frantz, M., **Welsh, A.**, and Wood, P. (2014) Epigenetic (DNA methylation) variation in the Louisiana waterthrush due to shale gas development in West Virginia. The Wildlife Society meeting, Pittsburgh, PA
- Price, L. and **Welsh, A.** (2014) Genetic differentiation of lake sturgeon in the St. Lawrence River. American Fisheries Society meeting, Quebec City, QC
- Wood, D., and **Welsh, A.B.** (2014) Landscape genetics of white-tailed deer in West Virginia. The Wildlife Society meeting, Pittsburgh, PA
- Marranca, J., **Welsh, A.**, and Roseman, E. (2013) Genetic assessment of lake sturgeon origin following reproduction on an artificial reef. International Sturgeon Symposium, Nanaimo, BC.
- Whitaker, J., **Welsh, A.**, Boase, J., and Hondorp, D. (2013) Morphometric analysis of lake sturgeon. International Sturgeon Symposium, Nanaimo, BC.
- Wood, D.M., and **Welsh, A.B.** (2013) Effects of culverts on brook trout genetic diversity. Wild Trout Symposium IX, Yellowstone National Park, WY
- Wood, D.M., and **Welsh, A.B.** (2012) Effects of culverts on brook trout genetic diversity. 4th Annual Forest Resources and Environmental Graduate Research Symposium, Blacksburg, VA
- Wood, D.M., and **Welsh, A.B.** (2012) Effects of culverts on brook trout genetic diversity. 16th Annual Davis College of Agriculture, Natural Resources, and Design Graduate Research Conference, Morgantown, WV
- Questel, J., Smith, R., Walsh, M., and **Welsh, A.** (2011) Genetic determination of the origin of *Hemimysis anomala* in the Laurentian Great Lakes. American Fisheries Society meeting, Seattle, WA.

Workshops -

- Welsh, A.B.** (2021) Tools for studying genetics. Workshop on “Using genetics for successful conservation and restoration of resilient Chesapeake Bay brook trout populations. Chesapeake Bay Program’s Scientific Technical and Advisory Committee, virtual
- Coster, S. and **Welsh, A.B.** (2019) Using genetics to enhance fish and wildlife management. The Wildlife Society Annual Meeting, Reno, NV
- Schreier, A., Congiu, L., and **Welsh, A.** (2017) Using genetics to improve sturgeon and paddlefish management and conservation. International Sturgeon Symposium, Vienna, Austria

Welsh, A.B. and Coster, S. (2016) Using genetics to enhance fish and wildlife management. Northeast Association of Fish and Wildlife Agencies Annual Meeting, Annapolis, MD

Welsh, A.B., Rounsiville, T.F., and Wood, D.M. (2016) Wildlife forensics. West Virginia Division of Natural Resources Law Enforcement.

MENTORED GRADUATE STUDENTS

Current graduate students

Andrew Johnson, Ph.D. student (2021-present)

Dissertation: Genomics of West Virginia game fishes

Madison Miller, Ph.D. student (2023-present)

Dissertation: Genomic assessment of Appalachian cottontail and snowshoe hares in WV

Lauren Schumacher, Ph.D. student (2021-present)

Dissertation: Genomic assessment of ecology of Lake Superior lake sturgeon

Amylynn Ephraim, M.S. student (2023-present)

Thesis: Connectivity among Cheat Mountain salamander in the Canaan Valley Wildlife Refuge

Adam Cook, M.S. student (2023-present)

Thesis: Genomic evaluation of elk reintroduction in WV

Eden Nitza, M.S. student (2022-present)

Thesis: Genomic analysis of diet and population structure in river otters

Former graduate students

Cassia Busch, M.S. (2022)

Thesis: Genetic analysis of Atlantic Sturgeon (*Acipenser oxyrinchus oxyrinchus*) movements

Mary Akers, M.S. student (2022)

Thesis: Genetic assessment of lake sturgeon stocking practices in two Lake Superior tributaries

Caroline Harms, M.S. (2021)

Thesis: Population genetics of a reintroduced fisher (*Pekania pennanti*) population in West Virginia

Brin Kessinger, M.S. (2020)

Thesis: Utilizing conservation genetics as a strategy for recovering the endangered Candy Darter (*Etheostoma osburni*) in West Virginia

Lucas Nathan, Ph.D. (2018) - co-advised with Dr. Jason Vokoun, U. of Connecticut

Dissertation: Conservation implications of watershed-level brook trout riverscape genetics

Thomas Rounsiville, Ph.D. (2018)

Dissertation: The bobcats of West Virginia: how many and where are they?

Darren Wood, Ph.D. (2018)

Dissertation: The use of genetic tools to assist in white-tailed deer (*Odocoileus virginianus*) management in West Virginia

Meghan Jensen, Ph.D. (2017)

Dissertation: Conservation genetics and genomics of North American forest hawks (Genus: *Accipiter*)

Isaac Gibson, M.S. (2017)

Thesis: Conservation concerns for the Candy Darter (*Etheostoma osburni*) with implications related to hybridization

Justine Whitaker, Ph.D. (2016)

Dissertation: Migratory genomics of lake sturgeon

Jamie Maranca, M.S. (2014)

Thesis: Identification and genetic diversity of lake sturgeon larvae of artificial reefs in the Huron-Erie corridor

Darren Wood, M.S. (2014)

Thesis: Effects of culverts on brook trout genetic diversity

Current graduate student committees

Sara Bodnar, Ph.D. student

Dissertation: Developing methods for enhancing success of analyzing trace DNA in forensic applications

Alexander Lamping, M.S. student

Thesis: Brook trout detection methods

Clay Raines, Ph.D. student

Dissertation: Fish pathogens

Lakyn Sanders, Ph.D. student

Dissertation: Population genomics of poplar

Cheyenne Simpson, Ph.D. student

Dissertation: Assessment of the immune status of smallmouth bass

Hana Thixton, Ph.D. candidate

Dissertation: Population genomics and phylogeography of orchids

Molly Younker, M.S. student

Thesis: An investigation into secondary transfer of trace DNA via nitrile gloves at crime scenes

Former graduate student committees

Victoria Ayres, Ph.D. (2022)

Dissertation: The effects of feed additives and the use of a novel wood boiler heat exchanger on litter quality, broiler performance, and immune status

Erin Morrison, M.S. (2022)

Thesis: Reproductive rates, kitten survival, and den site selection of bobcats (*Lynx rufus*) in the Black Hills, South Dakota

James O'Dwyer, Ph.D. (La Trobe University, Australia) (2022)

Dissertation: Using genetics to aid management in the promotion of connectivity, recruitment, and genetic diversity for Australian fish species

Lucas Price, Ph.D. (2022)

Dissertation: Ecology of black-legged ticks (*Ixodes scapularis*) at Fort Drum Military Installation, New York

Chris Schwinghamer, Ph.D. (2022)

Dissertation: Factors influencing brook trout population dynamics and resilience in central Appalachian headwater streams

Kaylyn Zipp, M.S. (2022)

Thesis: Integration of fisheries ecology with the assessment of microplastic consumption in black bass in the upper Ohio River drainage

Stephen Knott, M.S. (2021) (Frostburg State University)

Thesis: Demographic and genomic evaluation of a peripheral population of mud sunfish in the Atlantic slope drainage

Andrew Weaver, Ph.D. (2020)

Dissertation: Impact of sire selection and breed on parasite resistance in sheep

Ran Zhou, Ph.D. (2020)

Dissertation: Evolutionary genomics of dynamic sex chromosomes in the Salicaceae

Alice Millikin, Ph.D. (2019)

- Dissertation: Population health of spotted salamanders (*Ambystoma maculatum*) in created vernal pools: an integrative approach
Mack Frantz, Ph.D. (2019)
Dissertation: Spatial assessment and epigenetic variation in the Louisiana Waterthrush (*Parkesia motacilla*) due to oil and gas well development in West Virginia
Ryan Braham, Ph.D. (2018)
Dissertation: An examination of cyanotoxins and environmental estrogens in the middle and upper Potomac River watershed, USA
Emily Underwood, M.S. (2018)
Thesis: An interspecies investigation of thyroid plasma hormone concentrations, histology, and gene expression
Heather Walsh, Ph.D. (2018)
Dissertation: Application of molecular pathology techniques to understand mechanisms of disease in smallmouth bass
Kelsey Young, M.S. (2018)
Thesis: Assessment of melanistic lesions in smallmouth bass (*Micropterus dolomieu*) of the Chesapeake Bay, USA
Stephanie Landry, M.S. (2017)
Thesis: Bobcat Population Ecology: Age, Reproductive Success, Diet, Parasites, and Pathogens of Bobcats across West Virginia
Lydia Stiffler, M.S. (2017)
Thesis: Assessing distribution and abundance of King and Clapper Rails in coastal Virginia using acoustic sampling.
Cassidy Hahn, Ph.D. (2016)
Dissertation: Development and application of quantitative gene expression assays in wild-caught, non-model fish species
Meenakshi Mukherjee, Ph.D. (2016)
Dissertation: Phenotypic and genotypic characterization of lumbosacral stenosis in Labrador retrievers.
Jan-Michael Hessenauer, Ph.D. (2015), University of Connecticut
Dissertation: Contemporary and Historic Effects of Fishing on Largemouth Bass Populations, Using Unexploited Populations for Reference
Paola Reale, M.S. (2012)
Thesis: Genetic basis for thermal tolerance in two different strains of Rainbow Trout (*Oncorhynchus mykiss*): Case Western and Kamloops

AWARDS

- 2023 – 2022 Recovery Champion (Candy Darter Conservation Team) – U.S. Fish & Wildlife Service
2023 – Outstanding Teacher – Davis College of Agriculture, Natural Resources, and Design
2023 - Outstanding Faculty Award for Teaching - Division of Forestry and Natural Resources
2022 – Nicholas Evans Award for Excellence in Undergraduate Advising – West Virginia University
2022 – Outstanding Honors Advisor Award – WVU Honors College
2021 – Honors Faculty Fellow – West Virginia University
2020 - Outstanding Faculty Award for Service - Division of Forestry and Natural Resources
2019 - James and Karen Caveney Alumni Association Faculty Excellence Award
2018 – Outstanding Faculty Award for Research – Division of Forestry and Natural Resources
2018 – Outstanding Faculty Award for Teaching – Division of Forestry and Natural Resources
2018 – Outstanding Teacher – Davis College of Agriculture, Natural Resources, and Design
2015 – Outstanding Faculty Award for Research – Division of Forestry and Natural Resources
2008 – Award of Excellence for Research – State University of New York - Oswego

PROFESSIONAL SERVICE

West Virginia University Wildlife and Fisheries Program, Program Coordinator (2022-present)

Manage and oversee both the undergraduate and graduate components of the Wildlife and Fisheries program (~250 undergraduate students, ~45 graduate students). Act as a liaison between the Division Director and the 11 Wildlife and Fisheries faculty. Recruit prospective students to the University and our program. Generate and manage budget requests.

Provost's Faculty Advisory Committee (2023-present)

Provide faculty feedback on the Academic Transformation process and advise the Provost's office on the impacts of potential changes on faculty and the academic community.

West Virginia University Bridge Science and Technology Policy Initiative on Carbon Dioxide Removal (2021-2022)

Serve on the sub-committee evaluating the ecological and conservation impacts of carbon dioxide removal technologies and interpreting them in a policy framework.

West Virginia University Faculty Senate General Education Foundations Committee Chair-Elect (2020-2021); Chair (2021-2022); Committee member (2022-present)

Evaluate General Education curriculum and approve courses that fulfill General Education requirements

West Virginia University Faculty Senate Faculty Welfare Committee (2020-2022)

Address concerns regarding the welfare of University faculty

West Virginia University Faculty Senator (2018-2021)

One of six elected faculty senators representing the Davis College, acting as a liaison between the faculty and the University

West Virginia University Genomics Core Advisory Committee (2019-present)

Provide guidance and support to the WVU Genomics Core Facility.

West Virginia University Division of Forestry & Natural Resources Promotion and Tenure Committee (2019-2022)

Conduct annual reviews of Division faculty. Review faculty applying for promotion and/or tenure.

Faculty advisor, Women in Natural Resources organization (2017-2020)

One of the founding members of this organization representing the needs and interests of female faculty, staff, and students in the Division of Forestry and Natural Resources

West Virginia University Division of Forestry & Natural Resources Curriculum Committee (2016-present)

Review curricular changes initiated in the Division of Forestry and Natural Resources.

West Virginia University Davis College Executive Committee (2016-2020); Chair (2019-2020)

Faculty representative of the Division of Forestry and Natural Resources, acting as a liaison between the faculty and the Dean.

Peer Review Panel Member, Great Lakes Fishery Trust (2016-2018)

One of five members of the scientific peer review panel responsible for reviewing full proposals submitted to the Great Lakes Fishery Trust and submitting funding recommendations

Chair, Quantitative Ecologist Search Committee, School of Natural Resources (2015)

Chair, Division of Forestry and Natural Resources Undergraduate Research Committee (2014-2016)

Initiated and led the committee to encourage undergraduate research in the Division; managed the development of award guidelines and selection of award recipients

Secretary/Treasurer, American Fisheries Society, Genetics Section (2014-2016)

Manage funds for the section, take meeting minutes, manage section membership.

Faculty advisor, WVU student chapter of Society for Conservation Biology (2012-2019)

Formed a new chapter of this international professional society. Assist in the coordination of events and activities.

Chairperson, Wright Award, American Fisheries Society, Genetics Section (2013-2016)

Reviewed student applications for the Wright Award, which provides a graduate student with travel funds to the national meeting. Coordinated reviews of other committee members to select a winner.

Manuscript review (2003-present)

Journals: Genetics Selection Evolution, Global Ecology and Conservation, Fisheries, American Midland Naturalist, Conservation Genetics, Molecular Ecology, PLoS One, Environmental Biology of Fishes, North American Journal of Fisheries Management, Transactions of the American Fisheries Society, Journal of Applied Ichthyology, Aquaculture Research, Fish Physiology and Biochemistry, Journal of Great Lakes Research, Canadian Journal of Fisheries and Aquatic Science, Journal of Heredity, Ecology and Evolution, Heredity, Biological Invasions, Environmental DNA, BMC Genomics, Biological Conservation

Grant proposal review (2002; 2005-present)

Great Lakes Fishery Commission; National Fish and Wildlife Foundation; New York Sea Grant; Arctic-Yukon-Kuskokwim Sustainable Salmon Initiative; Minnesota Sea Grant; NOAA-Fisheries; South Carolina Water Resources Center; Sea Grant; Great Lakes Fishery Trust; Czech Science Foundation; Canada Foundation for Innovation

Phelps Award Committee, American Fisheries Society, Genetics Section (2013)

Reviewed all genetics paper published in 2012 in the four American Fisheries Society journals to select the winner of the Phelps Award.

Department of Biological Sciences service, SUNY-Oswego (2007-2011)

First-Year advisor; Member of the Curriculum committee; Chair of the Awards committee (2007-2008); Member of the Molecular Biologist Search Committee (2008-2009); Representative on the Campus Technology Advisory Board (2007-2008); Representative on Faculty Assembly (2008-present); Member of the Provost's Committee on Scientific and Quantitative Literacy (2008-2009); Member of the Personnel Committee (2009-2011); Chairperson of the Provost's Committee on Biotechnology Planning (2009-2011)

Expert Participant (2009)

Department of Fisheries and Oceans Canada Lake Sturgeon Recovery Workshop

Provided peer review, guidance, and feedback on agency efforts to assess the recovery potential of lake sturgeon in Hudson Bay.

Guest Speaker (2006)

U.S. Department of State International Visitor Leadership Program

Hosted a group of sturgeon biologists and managers from Azerbaijan at our genetics laboratory.

Described the use of genetics in the management of North American sturgeon species.

Genetic Support (2004, 2005)

Lake Michigan Lake Sturgeon Task Group; Lake Superior Lake Sturgeon Task Group

Presented genetic data and answered questions about implications of the data at meetings where members were making lake sturgeon management decisions.

Treasurer (2004-2005)

Society for Conservation Biology – UC Davis Student Chapter

Work as a team with other officers to organize and motivate chapter for the 2004-2005 school year.

Manage chapter funds and membership dues.

Graduate student representative (2003-2005)

Conservation Biology Area of Emphasis, Ecology Graduate Group, UC Davis.

Represent needs and interests of graduate students in the Conservation Biology Area of Emphasis to the parent graduate group. Assist in planning graduate student seminar with conservation focus.

Chairperson, Educational Outreach Committee (2002-2005)

Society for Conservation Biology – UC Davis Student Chapter

Coordinate educational outreach to children about local endangered species.