

# Yeon-Seon Jeon, Ph.D. Candidate

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## RESEARCH INTERESTS

Bioinformatics, Ecotoxicology, Conservation Genetics

## EDUCATION

Ph.D. in Natural Resource Sciences (Avian Ecotoxicology Lab), McGill University, Canada	2018-2024
M.Sc. in EcoScience (Molecular Ecology Lab), Ewha Womans University, South Korea	2015-2017
B.Sc. in Environmental Science and Engineering, Ewha Womans University, South Korea	2010-2015

## AWARDS AND SCHOLARSHIPS

YC Realty Inc. Scholarship, Korean Canadian Scholarship Foundation	2023
EcotoQ Mobility Scholarship, Le Regroupement des Ecotoxicologues du Quebec	2019-2021
Korean Honor Scholarship, Embassy of the Republic of Korea in Canada	2019
Travel Award, Society of Environmental Toxicology and Chemistry North America	2019
Graduate Excellence Awards, McGill University	2018-2021
Graduate Research Enhancement and Travel Award, McGill University	2018
Fulbright Graduate Study Award, Korean-American Educational Commission (Declined)	2017
Graduate School Award for Dissertation with Highest Honors, Ewha Womans University	2017
Best Presentation Award, 9 <sup>th</sup> Ewha-JWU-Ochanomizu Joint Symposium	2016
Research Assistant Scholarship, Ewha Womans University	2016
Honor of the Scholarship for an Excellent Student, Ewha Womans University	2015

## THESIS AND PUBLICATIONS

### Thesis

Jeon, Y. S. (2017). Morphological variation and population genetic structure of the Nalbant's spined loach, *Cobitis nalbanti* (Master's thesis).

### Publications

- Jeon, Y. S., Sangiovanni, J., Boulanger, E., Crump, D., Liu, P., Ewald, J., ... & Head, J. (2024). Hepatic Transcriptomic Responses to Ethinylestradiol in Embryonic Japanese Quail and Double-crested Cormorant. *Environmental Toxicology and Chemistry*.
- Liu, P., Ewald, J., Legrand, E., Jeon, Y. S., Sangiovanni, J., Hacariz, O., Pang, Z., Zhou, G., Head J., Basu, N., & Xia, J. (2023). ExpressAnalyst: A unified platform for RNA-sequencing analysis in non-model species. *Nature Communications*, 14(1), 2995.
- Jeon, Y. S., Head, J., Basu, N., Boulanger, E., Ewald, J., Farhat, A., Hecker, M., Soufan, O., Xia, J., & Crump, D. (2022). Hepatic transcriptomic responses to ethinylestradiol in two life stages of Japanese quail. *Environmental Toxicology & Chemistry*.
- Legrand, E., Jeon, Y. S., Basu, N., Hecker, M., Crump, D., Xia, J., Chandramouli, B., Butler, H., & Head, J. (2022). Consideration of metabolomics and transcriptomics data in the context of using avian embryos for toxicity testing. *Comparative Biochemistry and Physiology Part C: Toxicology & Pharmacology*, 109370.
- Heo, J., Jeon, Y. S., Ko, M. H., & Won Y. J. (2022). Anthropogenic habitat interconnection provokes homogenization

- of allopatric freshwater fish: concordance of genetic and phenotypic evidence. *Hydrobiologia*.
- Boulanger, E., Farhat, A., Jeon, Y. S., Basu, N., Hecker, M., Crump, D., & Head, J. A. (2020). Evaluation of the toxic effects of eight environmental chemicals in adult Japanese Quail (*Coturnix japonica*). *Figshare*.
  - Jeon, Y. S., Ko, M. H., Vasil'eva, E. D., & Won, Y. J. (2020). Genetic patterns reveal northward range expansion and cryptic diversity in the Nalbant's spined loach, *Cobitis nalbanti* (Teleostei: Cypriniformes: Cobitidae). *Systematics and Biodiversity*.
  - Kwan, Y. S., Ko, M. H., Jeon, Y. S., Kim, H. J., & Won, Y. J. (2019). Bidirectional mitochondrial introgression between Korean cobitid fish mediated by hybridogenetic hybrids. *Ecology and evolution*, 9(3), 1244-1254.
  - Ko, M. H., Jeon, Y. S., & Won, Y. J. (2017). Early life history of the eastern Korean tetraploid spined loach, *Iksookimia yongdokensis* (Pisces: Cobitidae). *Folia Zoologica*, 66(3), 153-162.
  - Jeon, Y. S., Johnson, S. B., Won, Y. J., & Vrijenhoek, R. C. (2016). Complete mitochondrial genome of the headwater livebearer, *Poeciliopsis monacha*: the mother of clones. *Mitochondrial DNA Part B*, 1(1), 793-794.
  - Ko, M. H., Jeon, Y. S., & Won, Y. J. (2016). The habitat, age and spawning characteristics of the Korean eastern spined loach, *Iksookimia yongdokensis* (Pisces: Cobitidae) in the Chuksancheon (stream), Korea. *Korean Journal of Ichthyology*, 28(4), 239-248. (In Korean)
  - Jeon, Y. S., Hong, M. J., Park, M. K., & Choi, Y. S. (2015). Path Prediction and Suggestion of Efficient Collection Points for Marine Plastic Debris Based on Betweenness Centrality Analysis. *Journal of Korean Society of Environmental Engineers*, 37(7), 426-431. (In Korean)
  - Kim, E. M., Jeon, Y. S., Jeong, G. S., Kim, S. J., Kang, C. W., Oh, M. R., ... & Won, H. K. (2014). The Study on the Sexual Difference in the Cause and the Time of Casualty and in the Size of the Fairy Pitta (*Pitta nympha*) through DNA Analysis in Republic of Korea. *Journal of Environmental Science International*, 23(8), 1447-1453. (In Korean)
  - Kim, E. M., Jeon, Y. S., Kim, S. J., Kang, C. W., Won, H. K., & Jeong, G. S. (2014). The Genetic Approach on Analyzing the Habitat Characteristics of Fairy Pitta *Pitta nympha* Inhabiting Jeju Island, the Korean Peninsula and Taiwan. *Journal of the Korea Society of Environmental Restoration Technology*, 17(1), 81-90. (In Korean)

## PRESENTATIONS

### Talks

- Sex-dimorphism in Hepatic Transcriptomic Responses of Embryonic Japanese Quail to Ethinylestradiol, Society of Environmental Toxicology and Chemistry North America 43<sup>rd</sup> Annual Meeting, November 2022
- Hepatic Transcriptomic Responses to Ethinylestradiol in Embryonic Japanese Quail and Double-Crested Cormorant, Centre for Research in Reproduction and Development Hot Topics, December 2021
- Comparison of hepatic transcriptomic responses to ethinylestradiol in embryonic Japanese quail and double-crested cormorant, Society of Environmental Toxicology and Chemistry North America 42<sup>nd</sup> Annual Meeting, November 2021
- Overlapping transcriptional changes in embryonic and adult Japanese quail following exposure to ethinylestradiol, Colloque Conjoint en Écotoxicologie, June 2021
- Comparison of transcriptomic responses to ethinylestradiol in two life stages of Japanese quail, Society of Environmental Toxicology and Chemistry North America 40<sup>th</sup> Annual Meeting, November 2019
- Avian hepatic transcriptomic responses to ethinylestradiol: Are early life stage Japanese quail representative of adults?, 46<sup>th</sup> Annual Canadian Ecotoxicity Workshop, October 2019
- Population genetic structure with a morphological cline of *Cobitis nalbanti*, 9<sup>th</sup> Ewha-JWU-Ochanomizu joint symposium, December 2016
- Population analysis using mitochondrial genes of *Pitta nympha*, The Ornithological Society of Korea, April 2013

### Posters

- Linking histological and morphological effects of ethinylestradiol with transcriptomic responses in early-life stage Japanese quail, 48<sup>th</sup> Annual Canadian Ecotoxicity Workshop, October 2022

- Hepatic gene expression alteration induced by ethinylestradiol exposure in embryonic and adult Japanese quail, Centre for Research in Reproduction and Development Research Day, May 2021
- Characterization and comparison of hepatic transcriptomic responses to ethinylestradiol in embryonic Japanese quail and double-crested cormorant, Society of Environmental Toxicology and Chemistry North America 41<sup>st</sup> Annual Meeting, November 2020
- Comparison of hepatic transcriptomic responses in early-life stage Japanese quail following exposure to 8 different environmental chemicals, Society of Environmental Toxicology and Chemistry North America 40<sup>th</sup> Annual Meeting, November 2019
- Comparison of transcriptomic responses to ethinylestradiol in two life stages of Japanese quail, Society of Environmental Toxicology and Chemistry North America 40<sup>th</sup> Annual Meeting, November 2019
- Evaluation of the effects of ethinylestradiol and chlorpyrifos using an early-life stage Japanese quail toxicity test, Society of Environmental Toxicology and Chemistry North America 39<sup>th</sup> Annual Meeting, November 2018
- Early life history of the eastern Korean tetraploid spined loach, *Iksookimia yongdokensis* (Pisces: Cobitidae), Conference of Korean Federation of Fisheries Science and Technology Societies, November 2016
- Population genetic structure with a morphological cline of *Cobitis nalbanti*, 9<sup>th</sup> Ewha-JWU-Ochanomizu Joint Symposium, December 2016
- The habitat, age, and spawning characteristics of the Korean eastern spine loach, *Iksookimia yongdokensis* (Pisces: Cobitidae) in the Chuksancheon (stream), Korea, Conference of Korean Federation of Fisheries Science and Technology Societies, October 2016
- Mitochondrial genome of the headwater livebearer, *Poeciliopsis monacha*: the mother of clones, Conference of Korean Federation of Fisheries Science and Technology Societies, October 2016
- Genetic structure of *Cobitis lutheri*, The Korean Society for Integrative Biology, August 2016

## RESEARCH PROJECTS

- Development of EcoOmicsAnalyst, 2021-present
- EcoToxChip Project, 2018-present
- Phylogenetic and population genetic study of three *Iksookimia* species in southern region of Korea, 2015-2018
- Study of population genetics and reproduction mode of the hybridizing sister Cobitidae fish species, *Cobitis tetralineata* and *C. lutheri*, 2015
- Study on DNA Barcode and Phylogeny of Korean Birds, 2013

## EXPERIENCE

### Research

*Research Assistant*, Ewha Womans University, South Korea, 2017-2018

- Wrote papers about cobitids
- Managed the project “Phylogenetic and population genetic study of three *Iksookimia* species in southern region of Korea” and relevant administrative tasks

*Assistant Surveyor*, Korea National Park Service, South Korea, 2015

- Conducted field survey of fish fauna in Mudeung Mountain National Park

*Assistant Researcher*, Wildlife Genetic Resources Center, South Korea, 2013

- Participated in “Study on DNA Barcode and Phylogeny of Korean Birds”
- Assisted sampling, and conducted experiments including DNA extraction, PCR, and gel electrophoresis
- Edited sequences and analyze them using MEGA, DnaSP, and Arlequin

*Intern*, Ecological Restoration Engineering Lab, Ewha Womans University, South Korea, 2012

- Collected and analyzed water deer feces from Janghang wetland to reveal their influence on soil

### Leadership

*Coordinator, Let's Talk Science, Canada, 2021-2022*

- Gave a talk as a panel in Sustainability Symposium for 6–16-year-old kids
- Drafted self-paced activity booklets/kits for homeschooling kids and libraries (The Delights of the Winter Season, Climate Change and Sustainability)

*President, University Birding Clubs of Korea, South Korea, 2013*

- Arranged lectures, workshops, a birding contest, and a yearly conference
- Issued a yearly report funded by LG Ever Green Foundation
- Established its logo and homepage (ubck.org) by teamwork
- *Director* of Cheongsan island survey

*President, Ewha Womans University Birding Club "Saerang," South Korea, 2011-2012*

- Organized workshops, bird walks, and an exhibition
- Ran a window strike project to rescue injured birds
- Ran an "Ongdalsam" project to provide water for in-campus birds, and record them with a bird cam
- *Academic Director* of the Han River survey
- *Director* of Seosan survey partly funded by Korea Marine Environment Management Corporation

*Leader, Campus Environment Improvement Team "Gongs," South Korea, 2010*

- Promoted student welfare through resolving the space waste problem
- Found and suggested a plan to change underused spaces to a lounge and a clubroom
- Notified classroom schedules to help students utilize unoccupied classrooms

## **Teaching**

*Teaching Assistant, Organism 2 Lab, McGill University, Canada, Winter 2022*

- Taught basic structure and function of various organisms by short lectures and hands-on dissections

*Assistant Teacher, Gifted Education in Science, Myeongmok High School, South Korea, Fall 2016 & Spring 2018*

- Guided a team of high school students during the ecology trip to Ganghwa Island
- Taught identification, plumage, diet, behavior, and ecological status of sandpipers, plovers, and egrets

*Teaching Assistant, General Biology Lab, Ewha Womans University, South Korea, Spring 2015*

- Taught how to distinguish *Cobitis nalbanti*, *C. tetralineata*, and their hybrids by phenotypes and red blood cell size analysis results

*Teaching Assistant, Ecology Field Trip, Ewha Womans University, South Korea, Summer 2015*

- Taught how to catch and identify freshwater fish

*Teacher, Ecologist's Fieldnotes Camp I & II, National Institute of Ecology, South Korea, 2015*

- Taught college students what molecular ecologists do in a field and a lab
- Guided field trips to sample ants, and taught how to extract DNA, do PCR and gel electrophoresis, and determined whether the ant is infected by *Wolbachia* or not

## **Other**

*Mentor, Studying Abroad Graduates of Ewha (SAGE), South Korea, 2020-present*

- Workshop for undergraduates in science of Ewha Womans University (Summer 2020 and Summer 2021) and 1:1 mentorship

*Student Judge, 46<sup>th</sup> Annual Canadian Ecotoxicity Workshop, Canada, 2019*

*Volunteer, McGill Bird Observatory, Canada, 2018-2019*

*Staff, 7<sup>th</sup> ARRCN Symposium on Asian Raptors, South Korea, 2012*

- Held by Asian Raptor Research and Conservation Network & Migratory Birds Center

*Mentor, Korea Center for Women in Science, Engineering, and Technology (WISNET), South Korea, 2012*

- Four high school students in Team Research Project for Women Scientists and Engineers

*Commentator, Hangang Bamseom Migratory Bird Observatory, South Korea, 2011-2012*

- Operated by LG Ever Green Foundation & Hangang Park Office, Seoul Metropolitan Government

*Staff*, Monitoring Program for Shorebirds on the Southern Yeongjong Island, South Korea, 2010  
- Held by Korea Marine Environment Management Corporation & University Birding Clubs of Korea

## **TRAINING**

IUCN Red List Assessor Training Workshop, IUCN & National Institute of Biological Resources, 2017  
The 10<sup>th</sup> Genome Data Analysis Workshop, Biomedical Informatics Training and Education Center (BITEC), 2016  
Ant Field Trip Camp, National Institute of Ecology, 2014  
Training on Bird Banding Survey, Migratory Bird Center, Korea National Park Research Institute, 2013

## **SKILLS**

### **Field experience**

Bird, fish, mammal, ant, soil, water, air

### **Experimental Techniques**

DNA/RNA extraction, PCR, gel electrophoresis, cloning, paraffin histology, avian embryonic exposure and dissection, LC-MS, GC-MS

### **Analytic Tools**

Omics: Galaxy, EcoToxXplorer, MetaboAnalyst, NetworkAnalyst, EcoOmicsAnalyst, Seq2Fun  
Molecular ecology: MEGA, Geneious, SITES, PartitionFinder, PHASE, Network, PopArt, DnaSP, Arlequin, STRUCTURE, Structure Harvester, NewHybrids, MrBayes, BEAST, RASP  
System dynamics: Vensim, STELLA  
Statistics: Excel, SPSS  
GIS (beginner)

### **Computer Language**

R (intermediate), Python (intermediate), C++ (beginner), IDL (beginner), Fortran (beginner), Matlab (beginner)

### **Language**

Korean (native), English (advanced)

### **License**

Open water diver license, driver's license

## **MEMBERSHIPS**

<i>Member</i> , Society of Environmental Toxicology and Chemistry, North America	2018-2023
<i>Member</i> , Korean System Dynamics Society	2015-2017
<i>Member</i> , Ornithological Society of Korea	2013-2015
<i>President</i> (2013) & <i>Member</i> , University Birding Clubs of Korea	2010-2015
<i>President</i> (2011-2012) & <i>Member</i> , Ewha Womans University Birding Club	2010-2015