

# Curriculum Vitae: Hernán López-Fernández, Associate Curator of Ichthyology

(As of July 11, 2008)

**Name:** Hernán López-Fernández  
**Address:** Department of Natural History  
Royal Ontario Museum  
100 Queen's Park  
Toronto, Ontario, Canada, M5S 2C6  
**Telephone:** (416) 586-7948  
**E-mail:** [hernanl@rom.on.ca](mailto:hernanl@rom.on.ca), [hlopez\\_fernandez@yahoo.com](mailto:hlopez_fernandez@yahoo.com)  
**Date of birth:** November 4, 1974  
**Place of birth:** Montevideo, Uruguay  
**Nationality:** Venezuela, Uruguay

## Education

- 2004 Ph. D. Section of Ecology, Evolutionary Biology and Systematics, Texas A&M University. Dissertation Title: Phylogeny of geophagine cichlids from South America (Perciformes: Cichlidae). Kirk O. Winemiller and Rodney L. Honeycutt, Dissertation Co-Advisors.
- 1998 Licenciante in Biology (B.S.). Universidad de Los Andes, Mérida, Venezuela. Major: Biology, Minor (Specialization): Animal Ecology. Thesis title: Trophic Ecomorphology of *Satanoperca daemon* and *S. sp. cf. mapiritensis* (Teleostei: Perciformes: Cichlidae) in the Aguaro-Guariquito National Park, Guárico, Venezuela (In Spanish). Donald C. Taphorn, Thesis Advisor.

## Professional appointments

- 2008 Associate Curator of Ichthyology, Freshwater Fishes, Department of Natural History, Royal Ontario Museum, Toronto, Canada.
- 2006–2007 Postdoctoral Research Associate, Section of Ecology, Evolutionary Biology and Systematics, Texas A&M University. Adaptive radiation and convergent evolution in Neotropical cichlids. Postdoctoral advisors: Kirk O. Winemiller and Rodney L. Honeycutt (Pepperdine University).
- 2005–2006 Postdoctoral Fellow, Section of Integrative Biology, University of Texas at Austin. Evolution of hybrid inviability in centrarchid fishes. Postdoctoral advisor: Daniel I. Bolnick.
- 2004–2005 Visiting researcher, Museo de Ciencias Naturales de Guanare, Venezuela. Taxonomic revision of geophagine cichlids from Venezuela. Postdoctoral advisor: Donald C. Taphorn.

**Languages** Spanish (Speak, read, write), English (Speak, read, write), Portuguese (Speak, read), French (read).

### Research grants and fellowships

- 2008 Diversity of fishes of the Rupununi portal in southern Guyana, with a preliminary exploration of speciation mechanisms in Neotropical cichlids. ROM, Department of Natural History (H. López-Fernández, P.I.) (*Amount: \$4,000.00*).
- 2007-2008 Community assembly among endemic cichlids in the Rio Xingu, Pará State, Brazil. National Geographic Society (H. López-Fernández, P.I.) (*Amount: \$16,300*).
- 2005 Adaptive Radiation and Evolutionary Convergence in Neotropical Cichlids. National Science Foundation (K.O. Winemiller, P.I. and R.L. Honeycutt, Co-PI; H. López-Fernández and M.L.J. Stiassny, Collaborators) (*Amount: \$232,000*).
- 2003 Axelrod Fellowship, Department of Ichthyology, American Museum of Natural History (*Amount: \$900*).
- 2001 Axelrod Fellowship, Department of Ichthyology, American Museum of Natural History (*Amount: \$1000*).
- 2000 Phylogeny and evolutionary ecology of geophagine cichlids of South America (Perciformes: Cichlidae). Jordan Endowment Fellowship, American Cichlid Association (*Amount: \$3,400*).
- 1999 Phylogeny and evolutionary ecology of geophagine cichlids of South America (Perciformes: Cichlidae). Collection Study Grant, American Museum of Natural History (*Amount: \$970*).

### Peer Reviewed publications

- 2008 K.O. Winemiller, López-Fernández, H., D. C. Taphorn, L. Nico and A. Barbarino. "Fish assemblages of the Casiquiare River, a corridor and zoogeographic filter for dispersal between the Orinoco and Amazon basins." *Journal of Biogeography*, (in press).
- 2008 D.I. Bolnick, M. Turelli, H. López-Fernández, P.C. Wainwright and T.J. Near. "Accelerated mitochondrial evolution and 'Darwin's corollary': Asymmetric viability of reciprocal F<sub>1</sub> hybrids in centrarchid fishes." *Genetics*, 178: 1037–1048
- 2007 H. López-Fernández, & D.I. Bolnick. "What causes partial F<sub>1</sub> hybrid viability? Incomplete penetrance versus genetic variation." *PLoS ONE* 2: e1294.
- 2007 S.B. Correa, K.O. Winemiller, H. López-Fernández and M.Galetti. "Seed consumption and dispersal by fishes: evolutionary perspectives." *BioScience*, 57: 748-756.
- 2006 López-Fernández, H., D.C. Taphorn and S.O. Kullander. "Two new species of *Guianacara* from the Venezuelan portion of the Guiana Shield (Perciformes: Cichlidae)." *Copeia*, 2006: 384-395.
- 2005 López-Fernández, H., R.L. Honeycutt, M.L.J. Stiassny and K.O. Winemiller. "Morphology, molecules, and character congruence in the phylogeny of geophagine cichlids from South America (Perciformes: Labroidei)." *Zoologica Scripta*, 34: 627-651.

- 2005 López- Fernández, H., R.L. Honeycutt and K.O. Winemiller. "Molecular phylogeny and evidence for an adaptive radiation of geophagine cichlids from South America (Perciformes: Labroidei)." *Molecular Phylogenetics and Evolution*, 34: 227-244.
- 2005 Willis, S.C., K.O. Winemiller and H. López-Fernández. "Habitat structural complexity and morphological diversity of fish assemblages in a Neotropical floodplain river." *Oecologia*, 142: 284-295.
- 2005 López-Fernández, H. and K.O. Winemiller. "Status of *Dionda diaboli* and report of established populations of exotic fish species in Lower San Felipe creek, Val Verde County, Texas." *The Southwestern Naturalist*, 50: 246-251.
- 2004 López-Fernández, H. and D.C. Taphorn. "*Geophagus abalios*, *G. dicrozoster* and *G. winemilleri* (Perciformes: Cichlidae), three new species from Venezuela." *Zootaxa*, 439: 1-27.
- 2003 López-Fernández, H. and K. O. Winemiller. "Morphological variation in *Acestrorhynchus microlepis* and *A. falcatus* (Characiformes: Acestrorhynchidae), reassessment of *A. apurensis* and distribution of *Acestrorhynchus* in Venezuela." *Ichthyological Exploration of Freshwaters*, 14: 193-208.
- 2000 López-Fernández, H. and K. O. Winemiller. "A review of Venezuelan species of *Hypophthalmus* (Siluriformes: Pimelodidae)." *Ichthyological Exploration of Freshwaters*, 11:35-46.

#### Graduate Students

- 2008 Devin Bloom**, Ph.D. committee member, Department of Ecology and Evolutionary Biology, University of Toronto. Major Advisor: Nathan R. Lovejoy.
- 2008 Natasha Meliciano**, Ph.D. dissertation evaluation panel, National Institute for Amazonian Research, Manaus, Brazil. Major Advisor: Tomas Hrbek.

#### Current and Past Collaborators

Kirk O. Winemiller, Carmen Montaña, S. Bibiana Correa, Allison Pease, Jennifer Cochran (Texas A&M University), Rodney L. Honeycutt (Pepperdine University), Melanie L. J. Stiassny (American Museum of Natural History), Daniel I. Bolnick (The University of Texas at Austin), Donald C. Taphorn, (Museo de Ciencias Naturales de Guanare, Venezuela), Izeni P. Farias (Universidade Federal do Amazonas, Brazil), Stuart C. Willis, Guillermo Ortí (University of Nebraska, Lincoln), Tomas Hrbek (University of Puerto Rico), Sven O. Kullander (Swedish Museum of Natural History), C. Darrin Hulsey (Georgia Institute of Technology), James S. Albert (University of Louisiana, Lafayette), Rocío Rodiles-Hernández, Míriam Soria-Barreto (Colegio de la Frontera Sur, Mexico), Mauro Galetti (Unversidade Estadual de São Paulo, Brazil), Thomas Near (Yale University), Alexandre Garcia (Universidade do Rio Grande, Brazil), Douglas Rodríguez-Olarte (Universidad Centro Occidental Lisandro Alvarado, Venezuela), Peter C. Wainwright, Michael Turelli (Univesity of California, Davis), Brian Sidlauskas (National Evolutionary Synthesis Center, Duke University), Calvin Bernard (University of Guyana, Georgetown).

#### Honors and awards

- 2006 Excellence in Writing Award, American Cichlid Association, for the article "Geophaginae: earth eating is not the whole story", Buntbarsche Bulletin, official publication of the American Cichlid Association.
- 2004 Braz Walker Research Grant, Federation of Texas Aquarium Societies.

- 2004 Ph.D. Student Award. Department of Wildlife and Fisheries Sciences, Texas A&M University.
- 2003 Best Oral Presentation, "The phylogeny of geophagine cichlids: an analysis combining morphology and molecules (Perciformes: Labroidei)", Neotropical Ichthyological Association, 83<sup>rd</sup> Annual Meeting of the American Society of Ichthyologists and Herpetologists, Manaus, Brazil.
- 1991-1996 Programa Premio al Talento (Awards to Talent Program), Undergraduate Scholarship, Fundación Gran Mariscal de Ayacucho (Venezuelan Government).

### Teaching experience

- 2007 Invited lecturer, Undergraduate class, Fundamentals of Ecology (Prof. Kirk O. Winemiller), Department of Wildlife and Fisheries Sciences, Texas A&M University, lecture on nutrient and water balance in plants and animals.
- 2006-2007 Undergraduate mentor. Undergraduate Experience in Environmental Biology Program, National Science Foundation. Students: Cassidy Crane and Crystal Watkins, projects: A multilocus phylogeny of the Neotropical Cichlidae and Feeding performance of Neotropical cichlids on benthic prey.
- 2006 Undergraduate mentor. Research Experience for Undergraduates Program, National Science Foundation. Student: Cassidy Crane, project: A phylogeny of the Neotropical Cichlidae based on ribosomal 16S sequences.
- 2005-2006 Undergraduate mentor. Section of Integrative Biology, University of Texas at Austin. Students: Zack Lanfear, Sheng Ma. Project: Postzygotic hybrid inviability in sunfishes in the genus *Lepomis*.
- 2005 Scientific writing for advanced English students, A 24 hour course taught at the Venezuelan-American Center of Mérida (CEVAM) in Mérida, Venezuela.
- 2004 Invited lecturer, Undergraduate class, Ichthyology (Prof. John E. McEachran), Department of Wildlife and Fisheries Sciences, Texas A&M University, lecture on respiration in fishes.
- 2003-2004 Teaching Assistant, Fundamentals of Ecology Lab (RENR 215), Renewable Natural Resources, Texas A&M University.
- 2002 Invited lecturer, Graduate class, Dynamics of Populations (WFSC 624, Prof. Kirk O. Winemiller), Departments of Wildlife and Fisheries Sciences/Entomology, Texas A&M University, lecture in convergent evolution.
- 2000 Invited lecturer, Undergraduate class, Zoology (ZOO 107, Prof. Leslie Kelso-Winemiller), Department of Biology, Texas A&M University, lecture in principles of evolution.
- 1999-2001 Teaching Assistant, Fundamentals of Ecology Lab (RENR 215), Renewable Natural Resources, Texas A&M University.
- 1998-1999 Teaching Assistant, Introductory Zoology (Zoology 107). Department of Biology, Texas A&M University.

- 1998-2003 Undergraduate Mentor, Department of Wildlife and Fisheries Sciences, Texas A&M University. Students: Stuart Willis, Michele Pepperman, Jeremy Walther. Various projects on fish ecology and behavior.
- 1994-1995 Teaching Assistant, General Biology (Biología 10), Department of Biology, Universidad de Los Andes, Mérida, Venezuela.

**Field experience (Funding agency when appropriate)**

- 2007 Principal investigator: Freshwater fish diversity of the upper Mazaruni River drainage, Guyana, South America. (U.S. National Science Foundation).
- 2007 Co-Principal Investigator (with K. Winemiller and R. Rodiles-Hernández): Cichlid diversity in the Usumacincta river drainage, Chiapas, Mexico. (National Science Foundation).
- 2005 Postdoctoral Research Associate: Centrarchid diversity in Texas. Collaboration with D.I. Bolnick. (University of Texas at Austin).
- 2005 Fish diversity in the Upper Orinoco river tributaries Mavaca and Ocamo, Amazonas State, Venezuela. Collaboration with K. Winemiller and S. Willis. (National Science Foundation).
- 2004 Fish diversity in the Xingu and Tapajos rivers, Pará State, Brazil. Collaboration with T. Hrbek, S. Willis and I. Farias. (National Science Foundation and University of Puerto Rico).
- 2004 Research Assistant: Ecological restoration following brush management: diversity in aquatic and terrestrial systems (U.S. Army Corps of Engineers).
- 2001-2003 Research Assistant: Monitoring of aquatic communities of San Felipe Creek. (City of Del Rio, Texas)
- 2001 Research Assistant: Ecological restoration following brush management: diversity in aquatic and terrestrial systems (U.S. Army Corps of Engineers).
- 2001 Research Assistant: Migratory fish and food web subsidy in the Rio Cinaruco, Venezuelan llanos – an approach using stable isotopes (National Geographic Society).
- 2000 Research Assistant: Freshwater fish diversity in Benin, West Africa (National Geographic Society).
- 2000 Research Assistant: Population genetics of migratory prochilodontid fishes in Venezuela (National Geographic Society).
- 1999 Research Assistant: Diversity of black-water fishes in the Río Pasimoni, Venezuelan Amazon (National Geographic Society).
- 1998 Research Assistant: Assessment of Ecological integrity of streams in the Brazos-Navasota river watershed based on biotic indicators (Brazos River Authority).
- 1998 Research Assistant: Effects of land use on community structure and habitat quality of Andean Piedmont streams in Venezuela (National Geographic Society).

1993-1997 Research Assistant: Inventory and ecology of insectivorous bats in Venezuela (Universidad de Los Andes and Smithsonian Institution).

### **Service**

2007 Judge, Student paper awards, Neotropical Ichthyological Association, at Annual Meeting of the American Society of Ichthyologists and Herpetologists, St. Louis, MO, July 2007.

2006-2007 Organization committee. First Symposium on Freshwater Fish Biogeography of South America held at the Annual Meeting of the American Society of Ichthyologists and Herpetologists, St. Louis, MO, July 2007.

2002 Co-chaired the Third Annual Ecological Integration Symposium at Texas A&M University: "Evolutionary perspectives in Ecological Integration". Invited speakers: Jonathan Losos, Elisabeth Vrba, Craig Moritz, Stephen Hubbell, Paul Ewald and Peter Cranston. The symposium is an annual one-day conference on the current and future directions in ecology, evolutionary and conservation biology. February 16, 2002. <http://wfsc.tamu.edu/>

### **Referee for peer-reviewed publications**

American Museum Novitates (2), Biota Colombiana (1), Copeia (2), Ecotropicos (1), Hydrobiologia (1), Journal of Fish Biology (3), Memoria de la Sociedad de Ciencias Naturales La Salle (1), Molecular Ecology (1), Neotropical Ichthyology (1), Oikos (1), Organisms diversity and evolution (1), PanAmerican Journal of Aquatic Sciences (1), Systematics and Biodiversity (2), Zootaxa (4).

### **Professional societies**

Brazilian Society of Ichthyologists – Since 2007  
American Institute of Biological Sciences – Since 2007  
Society for the Study of Evolution – since 2002  
Society of Systematic Biologists – since 1998  
American Society of Ichthyologists and Herpetologists – since 1996  
Neotropical Ichthyological Association – since 1995

### **Invited scientific talks**

2007 Phylogeny and adaptive radiation in Neotropical cichlids. Royal Ontario Museum, Toronto, Canada.

2007 Phylogeny, adaptive radiation and convergent evolution in Neotropical cichlids. Department of Biology and Auburn University Museum, Auburn University, Alabama.

2006 Phylogeny and adaptive radiation in Neotropical cichlids. Department of Zoology, Field Museum of Natural History, Chicago, Illinois.

2006 Taxonomy and collections in fish ecology and evolution. Department of Zoology, Field Museum of Natural History, Chicago, Illinois.

2005 Filogenia molecular y evolución de una radiación adaptativa de cíclidos geofaginos de Sur América (Molecular phylogenetics and evolution of the adaptive radiation of South American geophagine cichlids). Department of Biology, Universidad de Los Andes, Mérida, Venezuela.

2004 Radiación adaptativa en cíclidos suramericanos filtradores de sustrato. Department of Biology, College of Sciences, Universidad de la República, Montevideo, Uruguay.

**Contributed Scientific Talks**

- 2007 López-Fernández, H., C. Crane, K. O. Winemiller, and R. L. Honeycutt. A multilocus phylogeny of the Neotropical Cichlidae. Annual meeting of the American Society of Ichthyologists and Herpetologists. Saint Louis, Missouri.
- 2007 López-Fernández, H., K. O. Winemiller and R. L. Honeycutt. A look at the “dark ages”: divergence times of Neotropical cichlids and some implications for South American freshwater fish biogeography. Symposium on Freshwater Fish Biogeography of South America, Annual meeting of the American Society of Ichthyologists and Herpetologists. St. Louis, Missouri.
- 2007 K. O. Winemiller, López-Fernández, H., D.C. Taphorn, L. Nico and A. Barbarino. The Rio Casiquiare Removed the Physical Barrier Between the Orinoco and Amazon Basins and Replaced it With an Environmental Filter. Annual meeting of the American Society of Ichthyologists and Herpetologists. Saint Louis, Missouri.
- 2007 López-Fernández, H., S. Willis, K. O. Winemiller, C. Watkins, and L. Berryhill. Experimental test for determining the feeding efficiency of digging/sifting Neotropical cichlids. Annual meeting of the American Society of Ichthyologists and Herpetologists. Saint Louis, Missouri.
- 2006 López-Fernández, H., K. O. Winemiller, R. L. Honeycutt and A. Pease. Phenotype-environment correlations in the adaptive radiation of South American geophagine cichlid fishes – feeding morphology. Annual meeting of the American Society of Ichthyologists and Herpetologists. New Orleans, Louisiana.
- 2005 López-Fernández, H. Preliminary analysis of mouthbrooding and life history evolution in geophagine cichlids (Perciformes, Labroidei). Annual meeting of the American Society of Ichthyologists and Herpetologists. Tampa, Florida.
- 2004 López-Fernández, H., R.L. Honeycutt, M.L J. Stiassny & K. O. Winemiller. Total evidence phylogeny of Neotropical geophagine cichlids using parsimony and Bayesian approaches. Annual meeting of the Society for the Study of Evolution, Society of Systematic Biologists, and American Society of Naturalists. Fort Collins, Colorado.
- 2004 López-Fernández, H. & K. O. Winemiller. Fish communities in habitats of San Felipe Creek in the City of Del Rio, Val Verde County, Texas. American Fisheries Society, Annual meeting of the Texas Chapter. College Station, Texas.
- 2003 López-Fernández, H., K.O. Winemiller, A. Adite, D.A. Arrington & C.A. Layman. Freshwater fish diversity in Benin, West Africa, and challenges for its conservation. 3rd International Conference of the Pan-African Fish and Fisheries Association. Cotonou, Benin.
- 2003 López-Fernández, H. The phylogeny of geophagine cichlids, an analysis combining morphology and molecules (Perciformes: Labroidei). 83<sup>rd</sup> Annual meeting of the American Society of Ichthyologists and Herpetologists. Manaus, Brazil.

- 2003 Willis, S.C., López-Fernández, H. & K.O. Winemiller. Habitat complexity and fish morphological diversity in a Neotropical river. 83<sup>rd</sup> Annual meeting of the American Society of Ichthyologists and Herpetologists. Manaus, Brazil.
- 2003 Winemiller K.O., H. López-Fernández, D.A. Arrington, D.C. Taphorn, L.G. Nico & A.Barbarino-Duque. Fish assemblages of the Casiquiare, zone of biotic interchange between Upper Orinoco and Rio Negro. 83<sup>rd</sup> Annual meeting of the American Society of Ichthyologists and Herpetologists. Manaus, Brazil.
- 2001 López-Fernández, H. and K. O. Winemiller. 2001. A revision of the species of *Acestrorhynchus* from Venezuela (Characiformes: Acestrorhynchidae). 81<sup>st</sup> Annual meeting of the American Society of Ichthyologists and Herpetologists. State College, Pennsylvania.
- 2000 López-Fernández, H. Feeding mechanics and ontogenetic diet shifts of *Satanoperca daemon* (Perciformes: Cichlidae) in the Río Aguaro, Venezuela. 80<sup>th</sup> Annual meeting of the American Society of Ichthyologists and Herpetologists. La Paz, Mexico.
- 1999 López-Fernández, H & K.O. Winemiller. A review of Venezuelan species of *Hypophthalmus* (Siluriformes: Pimelodidae). 79<sup>th</sup> Annual meeting of the American Society of Ichthyologists and Herpetologists. State College, Pennsylvania.
- 1997 Cabello, D., R. Casado, F. Díaz, López-Fernández, H., A. Orellana & R. Rivera. 1997. Population size of *Oleria makrena* (Lepidoptera: Nymphalidae: Ithomiinae) in a Venezuelan Andean Cloud Forest. XV Venezuelan Congress of Entomology. Trujillo, Venezuela.

#### **Invited Popular Articles**

- 2006 Geophaginae: earth eating is not the whole story. Speakers Program, Buntbarsche Bulletin, 233: 8-14.

#### **Invited Popular Talks**

- 2005 Geophagine cichlids: evolution, ecology, and taxonomy. South American Cichlids Study Group-American Cichlid Association, Annual Meeting, Fort Worth, Texas.
- 2005 Geophagine cichlids: evolution, ecology, and taxonomy. Federation of Texas Aquarium Societies, College Station, Texas.

#### **Research featured in popular media**

*Texas A&M University AgNews* (2004), *Buntbarsche Bulletin* (2004), *Tropical Fish Hobbyist* (2004, February 2007), *DATZ Aquarien Terrarien* (2004), *Practical Fish Keeping online news* (2004, 2005, 2006), *scienceblog.com* (2004).