





William B. Ludt

 Natural History Museum of Los Angeles County
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Professional Appointments & Experience

- 2019 – present • Assistant Curator of Ichthyology
Natural History Museum of Los Angeles County
 - 2019 – present • Research Associate
National Museum of Natural History
Smithsonian Institution
 - 2019 – present • Associate Editor
Journal of Natural History
 - 2018 – 2019 • Collette Postdoctoral Fellow in Systematic Ichthyology
National Museum of Natural History
Smithsonian Institution
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Education

- PhD • Louisiana State University 2018
Systematics, Ecology, & Evolution
 - MS • University of Texas at Austin 2011
Marine Science
 - BS • University of Arizona 2009
Wildlife Conservation & Management
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Research Interests

My research focuses on evolutionary biology, historical biogeography, and ichthyology. More specifically, I am interested in using genomic and morphological approaches to understand the evolutionary history of the world's fishes. My projects range in geographic and taxonomic scope, but rely on museum specimens and the data associated with them. I am interested in finding novel and creative uses for already cataloged museum material, applying new techniques and approaches for obtaining new museum material, and increasing access to the Robert J. Lavenberg fish collection at the Natural History Museum of Los Angeles County. Projects associated with the museum collection include increased specimen digitization by adding high-quality photographs, x-rays, and CT scans of specimens, taking new types of samples such as genome-quality tissue samples and microbiome-quality stomach content samples, and providing important metadata associated with collecting events.

Peer Reviewed Publications

*Designates Undergraduate Author

- Ludt WB**, Jabado RW, Al Hameli SM, Freeman L*, Teruyama G*, Chakrabarty P, Al Dhaheri SS (2020) Establishing a reference collection and DNA barcoding the coastal fishes of the United Arab Emirates. *Journal of the Ocean Science Foundation*, 35, 54–64.
- Shultz AJ, Adams BJ, Bell KC, **Ludt WB**, Pauly GB, Vendetti JE (2020) Natural history collections are critical and underutilized resources for contemporary and future studies of urban evolution. *Evolutionary Applications*, DOI: <https://doi.org/10.1111/eva.13045>.
- Hart PB, Niemiller NM, Burress ED, Armbruster JW, **Ludt WB**, Chakrabarty P (2020) Cave-adapted evolution in the North American Amblyopsid fishes inferred using phylogenomics and geometric morphometrics. *Evolution* 74(5), 936–949.
- Ludt WB**, Rocha LA, Chakrabarty P (2020) The first mitochondrial genomes of sawtail surgeonfishes (Acanthuridae: *Prionurus*). *Mitochondrial DNA Part B* 5(1), 212–213, DOI: 10.1080/23802359.2019.1699465
- Chakrabarty P, **Ludt WB**, Parker S (2019) The Louisiana State University Museum of Natural Science fish collections; An important modern collection of neotropical fishes and DNA. *Boletim Sociedade Brasileira de Ictiologia* 29, 49–52.
- Tea YK, Van Der Wal C, **Ludt WB**, Gill A, Lo N, Ho S (2019) Boomeranging around Australia: Historical biogeography and systematics of the anti-equatorial fish *Microcanthus strigatus* (Teleostei: Microcanthidae). *Molecular Ecology* 28(16), 3371–3785.
- Kenaley CP, State A, **Ludt WB**, Chakrabarty P (2019) Comparative functional and phylogenomic analyses of host association in the remora family Echeneidae (Percomporpha: Carangiformes). *Integrative Organismal Biology* 1(1), obz007, <https://doi.org/10.1093/iob/obz007>
- Crandall ED, Riginos C, ... **Ludt WB**, Pandolfi J, Toonen RJ, Gaither MR (2019) The molecular biogeography of the Indo-Pacific: testing hypotheses with multispecies genetic patterns. *Global Ecology & Biogeography* 28(7), 943–960.
- Ludt WB**, Burrige CP, Chakrabarty P (2019) A taxonomic revision of Cheilodactylidae and Latridae (Centrarchiformes: Cirrhitidae) using morphological and genomic characters. *Zootaxa* 4585(1): 121–141.
- Ludt WB**, Bernal MA, Kenworthy E*, Salas E, Chakrabarty P (2019) Investigating species limits of surgeonfishes from the Eastern Pacific (Acanthuridae: *Prionurus*) using genomic, ecological, and morphological data. *Ecology & Evolution* 9(7), 4001–4012.
- Alda F, Tagliacollo VA, Bernt MJ, Waltz BT, **Ludt WB**, Faircloth BC, Alfaro MA, Albert JS, Chakrabarty P (2019) Resolving deep nodes in an ancient radiation of neotropical fishes in the presence of conflicting signals from incomplete lineage sorting. *Systematic Biology*, 68(4), 573–593.
- Ludt WB**, Morgan L*, Bishop J, & Chakrabarty P (2018) A quantitative and statistical biological comparison of three semi-enclosed seas: The Red Sea, the Persian (Arabian) Gulf, and the Gulf of California. *Marine Biodiversity* 48(4), 2119–2124.
- Chakrabarty P, Faircloth BC, Alda F, **Ludt WB**, McMahan CD, Near TJ, ... & Alfaro ME (2017) Phylogenomic systematics of Ostariophysan fishes: ultraconserved elements support the surprising non-monophyly of Characiformes. *Systematic Biology*, 66(6), 881–895.
- Ng HH, Tan HH, Lim KKP, **Ludt WB**, Chakrabarty P (2015) Fishes of the eastern Johor Strait. *The Raffles Bulletin of Zoology*, Supplement 31.

Peer Reviewed Publications Continued

- Ludt WB**, Rocha LA, Erdmann MV, Chakrabarty P (2015) Skipping across the tropics: the evolutionary history of sawtail surgeonfishes (Acanthuridae: *Prionurus*). *Molecular Phylogenetics & Evolution* 84, 166–172.
- Derouen VA, **Ludt WB**, Ho H, Chakrabarty P (2015) Examining evolutionary relationships and shifts in depth-preferences in batfishes (Lophiiformes: Ogocephalidae). *Molecular Phylogenetics & Evolution* 84, 27–33.
- Ludt WB**, Rocha LA (2015) Shifting seas: the impacts of Pleistocene sea-level fluctuations on the evolution of tropical marine taxa. *Journal of Biogeography* 42, 25–38.
- Ludt WB**, Bernal MA, Bowen BW, Rocha LA (2012) Living in the past: phylogeography and population histories of Indo-Pacific wrasses (genus *Halichoeres*) in shallow lagoons versus outer reef slopes. *PloS One*, 7(6) e38042.
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Other Publications

- Ludt WB** (2016) A review of: A Field Guide to Coastal Fishes from Alaska to California. *Copeia*, 104(2), 611–612.
- Ludt WB** (2015) A review of: Review of Atlantic and Eastern Pacific Anthiine Fishes (Teleostei: Perciformes: Serranidae), with Descriptions of Two New Genera. *Copeia*, 103(1), 229–230.
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Awards & Grants

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| ADBC 2001443 DIGITIZATION PEN: CryptoVert – Digitizing small-bodied cryptobenthic fishes for the oVertTCN (\$172,739)
<i>National Science Foundation</i> | 2020 – 2023 |
| Collette Postdoctoral Fellowship in Systematic Ichthyology (\$54,700)
<i>National Museum of Natural History, Smithsonian Institution</i> | 2018 – 2019 |
| DEB 1701323 DISSERTATION RESEARCH: Phylogenomics and Evolutionary Rates associated with Salinity and Thermal Shifts in Centrarchiformes (\$17,967)
<i>National Science Foundation</i> | 2017 – 2019 |
| NSF Diversification Rates Bamm Workshop Travel Award (\$600)
<i>Oregon State University</i> | 2017 |
| SSE Travel Award (\$500)
<i>Evolution Meeting, Portland, OR</i> | 2017 |
| Outstanding Graduate Student Award
<i>LSU Museum of Natural Science</i> | 2016 |
| Schultz Fund Recipient (\$3,065)
<i>NMNH Smithsonian Institution</i> | 2016 |
| Ron & Mary Neal PUF Fellowship (\$11,525)
<i>Louisiana State University</i> | 2016 |
| Biograds Travel Fund (\$1,100)
<i>Louisiana State University</i> | 2013 – 2016 |

Awards & Grants Continued

Grants in Aid of Research (\$720) <i>Sigma Xi</i>	2015
Lerner-Gray Memorial Fund for Marine Research (\$2,000) <i>American Museum of Natural History</i>	2014
McDaniel Travel Award (\$400) <i>Louisiana State University</i>	2013
Professional Development Award (\$500) <i>University of Texas at Austin</i>	2011
REU Grant, Horn Point Laboratory, University of Maryland <i>National Science Foundation</i>	2008

Select First Author Presentations

- Ludt WB**, Collette BB, Baldwin C. Osteology of paired and median fins in Hemiramphidae and Exocoetidae with taxonomic comments. 2019 Annual ASIH Meeting, Snowbird, UT.
- Ludt WB**, Bernal MA, Kenworthy E, Salas E, Chakrabarty P. Investigating Species Limits of Surgeonfishes in the Eastern Pacific (Acanthuridae: *Prionurus*). 2018 Annual ASIH Meeting, Rochester, NY.
- Ludt WB**, BurrIDGE CP, Near TJ, Chakrabarty P. Understanding anti-tropical distributions in Centrarchiformes. 2017 ASIH Annual Meeting, Austin, TX & 10th Indo-Pacific Fish Convergence, Tahiti, French Polynesia.
- Ludt WB**, Bernal MA, Salas E, Chakrabarty P. Speciation in the Tropical Eastern Pacific? A case study with *Prionurus* surgeonfishes. 2017 Evolution Meeting, Portland, OR.
- Ludt WB**, Myers CE. What drives anti-tropical distribution across the fish tree of life? 2016 ASIH Annual Meeting, New Orleans, LA & 2017 IBS Meeting, Tucson, AZ.
- Ludt WB**, Brown JM, BurrIDGE CP, Chakrabarty P. An investigation of branch lengths using ultraconserved elements. 2016 Evolution Meeting, Austin, TX.
- Ludt WB**, BurrIDGE CP, Chakrabarty P. What, if anything, is a morwong? 2015 Evolution Meeting, Guarujá, Brazil & 2015 Annual ASIH Meeting Reno, NV.
- Ludt WB**, Rocha LA, Erdmann MV, Chakrabarty P. Crossing the tropics: insights from temperately restricted *Prionurus* surgeonfishes. 2014 ASIH Annual Meeting, Chattanooga, TN.
- Ludt WB**, Chakrabarty P, Rocha LA. Living outside the coral triangle: the evolutionary history and biogeography of the genus *Prionurus*. 9th Indo-Pacific Fish Conference, Okinawa, Japan & 2013 ASIH Annual Meeting, Albuquerque, NM.
- Ludt WB**, Bernal MA, Bowen B, Rocha LA. Sea level fluctuations and diversity in two habitats: Comparisons of two lagoon and two seaward reef wrasses (Genus *Halichoeres*). 2011 ASIH Annual Meeting, Minneapolis, MN.
- Ludt WB**, Pierson J, Kimmel D, Roman M. Determining egg development rates of *Acartia tonsa* in the Chesapeake Bay using a DAPI staining technique and its significance (Poster Presentation). 2009 CERF Conference, Portland, OR.

Invited Seminars

Southeastern Louisiana University 2017
Louisiana State University 2012

Mentorship

Mentor to the following volunteers, undergraduate and graduate students:

Link Morgan (LSU)	Glynn O'Neill (LSU)	Genta Teruyama (LSU)
Erica Kenworthy (LSU)	Chris Crowe (LSU)	Winston Anthony (UT)
Gabe Navar (LSU)	Layne Freeman (LSU)	Caris Han (USC)

Professional Societies

American Society of Ichthyologists and Herpetologists
Society of Systematic Biologists
The Society for the Study of Evolution

Teaching Experience

Organizer & Leader • UCE Workshop for Louisiana Ichthyologists 2015 & 2016
Louisiana State University

Instructor • Fish Identification Course 2016
Kuwait Institute of Scientific Research

Teaching Assistant • Introductory Biology, Ichthyology 2013 – 2018
Louisiana State University

Teaching Assistant • Oceanography 2009 – 2010
University of Texas at Austin

Consultancy

Ichthyology Consultant • Middle East Fishes 2016 & 2018
Environmental Agency of Abu Dhabi

Ichthyology Consultant • Gulf of Mexico Fishes 2016
Field Museum of Natural Science

Outreach & Public Service

Multiple Skype a Scientist Events 2020

Panelist • Night of Ideas, A Rx for the seven seas 2020
Natural History Museum of Los Angeles County

Main Presenter • Diver's Night 2019
Eco Dive Center

Main Presenter & Tour Guide • Night at the Museum Series 2016
LSU Museum of Natural Science

Outreach & Public Service Continued

Tour Guide • Louisiana Master Naturalists <i>LSU Museum of Natural Science</i>	2015 – 2016
LSUMNS Exhibitor • Our Finned Friends <i>USS Kidd Veterans Memorial & Museum</i>	2015 – 2016
Graduate Mentor • BIOS Program <i>Louisiana State University</i>	2014
LSUMNS Exhibitor • Ocean Commotion <i>Louisiana State University</i>	2013 – 2018
Judge • Environmentors Science Fair <i>Baton Rouge, LA</i>	2013
UTMSI Representative • 2 nd Annual Coastal Bend Feria Para Apender <i>Corpus Christi, TX</i>	2011
Dive Program Volunteer <i>Texas State Aquarium</i>	2010 – 2011
Exhibitor • Explore UT <i>University of Texas at Austin</i>	2010

Professional Service

Member of the Collections Committee <i>American Society of Ichthyologists and Herpetologists</i>	2019 – Present		
Stoye Committee Chair • ASIH Student Judging Committee <i>American Society of Ichthyologists and Herpetologists</i>	2019		
Student Representative • Web Content Committee <i>American Society of Ichthyologists and Herpetologists</i>	2017 – 2018		
Student Representative • Long Range Planning & Policy Committee <i>American Society of Ichthyologists and Herpetologists</i>	2017 – 2018		
Chair • Committee on Graduate Student Participation <i>American Society of Ichthyologists and Herpetologists</i>	2016		
President • Biograds <i>Louisiana State University</i>	2014 – 2015		
Committee Member • Graduate Student Book Raffle <i>American Society of Ichthyologists and Herpetologists</i>	2014		
Seminar Coordinator <i>LSU Museum of Natural Science</i>	2013 – 2014		
Manuscript Reviews for the Following Peer Reviewed Journals:			
<i>Conservation Genetics</i>	<i>Copeia</i>	<i>Journal of Biogeography</i>	
<i>Journal of Fish Biology</i>	<i>PLoS One</i>	<i>Molecular Ecology</i>	
<i>Molecular Phylogenetics & Evolution (Awarded “Outstanding Reviewer” in 2015)</i>			
<i>Zootaxa</i>	<i>Heredity</i>	<i>Zookeys</i>	<i>Marine & Freshwater Research</i>
<i>Journal of the Marine Biological Association of the United Kingdom</i>			

Scientific Expeditions

Costa Rica Freshwater collecting trip on the Atlantic slope	2019
Curacao Targeted collection of lionfishes and gobies with scuba and sub dives	2019
Tahiti, French Polynesia General market collecting of South Pacific fishes	2017
United Arab Emirates General trawling collections in coastal areas	2016
Brazil General collecting on the Amazon & Tapajós Rivers	2015
Panama Targeted collecting trip for marine reef fishes in the offshore Pacific islands	2015
Kuwait & United Arab Emirates General collecting in the Arabian Gulf	2015
Kuwait General collecting in the Arabian Gulf in collaboration with KISR	2014
Costa Rica Collected marine and freshwater fishes in Guanacaste	2014
Japan Market sampling Tsukiji – at the world’s largest fish market	2013
Singapore Three-week survey of Palau Ubin and the Johore Straits	2012
Gulf of Mexico Three research cruises collecting benthic fishes	2012 – 2014
Gulf of California Five research expeditions to the northern Gulf of California	2007 – 2008