

# RACHEL LYNN WELICKY

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## EMPLOYMENT

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- Department of Biology, Neumann University** Aston, PA  
*Assistant Professor of Ecology* 2022–
- School of Aquatic and Fishery Sciences, University of Washington** Seattle, WA  
*Washington Research Foundation Postdoctoral Fellow, Laboratory of Chelsea Wood* 2019–
- Water Research Group, North-West University** Potchefstroom, South Africa  
*Claude Leon Foundation Postdoctoral Fellow, Laboratory of Nico Smit* 2016–2019

## EDUCATION

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- Ph.D. Environmental Sciences\***, Arkansas State University Jonesboro, AR  
**M.Sc. Environmental Sciences\***  
*Laboratory of Paul Sikkel* 2010–2015
- M.Sc. Biological Sciences\***, Florida Atlantic University Boca Raton, FL  
*Laboratory of Jeanette Wyneken* 2008–2010
- B.Sc. Animal Science**, University of Vermont Burlington, VT  
2004–2008

\**Summa cum laude*

## PUBLICATIONS

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### *Published and In Press*

29. **Welicky, R.L.**, Feddern, M., Leazer, K., Rolfe, T., Fiorenza, E., Moosemiller, A., Holtgrieve, G., & Wood, C.L. Reconstructing trophic position over the past century for five Puget Sound fish species. *Marine Ecology Progress series*. 706:1–15. COVER FEATURE
28. Wood, C.L., **Welicky, R.L.**, Preisser, W., Leslie, L., Mastick, N, Greene, C....Essington, T.E. (2023). A reconstruction of parasite burden reveals one century of climate-associated parasite decline. *Proceedings of the National Academy of Sciences*. 17;120(3):e2211903120.  
**FEATURED IN NY TIMES** on Jan 9, 2023; <https://www.nytimes.com/2023/01/09/science/parasites-global-warming.html?smid=url-share>
27. Wood, C.L., Leslie, K., Claar D., Mastick, N., Preisser, N., Vanhoven, M.P.M., **Welicky, R.L.** (2023). How to use natural history collections to resurrect information on historical parasite abundances. *Journal of Helminthology*. 97:e6.
26. Pressier, W., **Welicky, R.L.**, Fiorenza, E., Leslie, K., Mastick, N., Maskilenikov, W., Tornabene, L., & Wood, C.L. (2022). Constant richness, shifting communities: 90 years of change in English sole (*Parophrys vetulus*) parasites. *Proceedings of the Royal Society B*. 149:786–798.
25. Huston, D.C., Cribb, T.H., & **Welicky, R.L.** (2021). Stable isotope signatures of an acanthocephalan and trematode from the herbivorous marine fish *Kyphosus bigibbus* (Perciformes: Kyphosidae). *Journal of Parasitology*. 107:726–730.

24. **Welicky, R.L.**, Preisser, W., Fiorenza, E., Leslie, K., Mastick, N., Maskilenikov, K, Tornabene, L., Kinsella, J.M., & Wood, C.L. (2021). Parasites of the past: Ninety years of change in parasitism for English Sole. *Frontiers in Ecology and the Environment*. <https://doi.org/10.1002/fee.2379>
23. Claar, D.C., Kuris, A., Leslie, K.L., **Welicky, R.L.**, Williams, M.A., & Wood, C.L. (2021). Parasite biodiversity. *Lessons in Conservation* 11(1):39–57. Available from <https://ncep.amnh.org/linc>.
22. Claar, D.C., Kuris, A., Leslie, K.L., **Welicky, R.L.**, Williams, M.A., & Wood, C.L. (2021). Parasite biodiversity: fish dissection and assays for parasites. *Lessons in Conservation* 11:58–67. Available from <https://ncep.amnh.org/linc>.
21. Claar, D.C., Kuris, A., Leslie, K.L., **Welicky, R.L.**, Williams, M.A., & Wood, C.L. (2021). Parasite biodiversity: community data analysis. *Lessons in Conservation* 11:68–75. Available from <https://ncep.amnh.org/linc>.
20. **Welicky, R.L.**, Leazer, K., Rolfe, T., Holtgrieve, G., & Wood, C.L. (2021). Fluid-preserved fishes are one solution for assessing historical change in fish trophic level. *Ecology and Evolution*. 11:415–426.
19. Bruce, N., **Welicky, R.L.**, Hadfield, K.A., & Smit, N.J. (2019). First description of a monotypic genus, *Bambalocra* from Sodwana Bay, South Africa. *Zookeys* 889:1–15.
18. Baillie, C., **Welicky, R.L.**, Hadfield K.M., Smit, N.J., Mariani S., & Beck, R.M.D. (2019). Hooked on you: shape of attachment structures in cymothoid isopods reflects parasitic strategy. *BMC Evolutionary Biology*. 19:207.
17. **Welicky, R.L.**, & Smit, N.J. (2019). Redescription and molecular characterisation of the fish ectoparasite, *Anilocra capensis* Leach 1818 (Isopoda, Cymothoidae), and the descriptions of six new *Anilocra* spp. from Africa. *Parasites and Vectors*. 12:1, 367.
16. **Welicky, R.L.**, Hadfield, K.A., Malherbe, W., & Smit N.J. (2019). Understanding growth relationships of African cymothoid fish parasitic isopods using specimens from museum and field collections. *International Journal for Parasitology: Parasites and Wildlife*. 8:182–187.
15. Sikkel, P.C., & **Welicky, R.L.** (2019). The Ecological Significance of Parasitic Crustaceans. In: Parasitic Crustacea: State of Knowledge and Future Trends. Eds: Smit N.J., Bruce, N.L., & Hadfield K.A. p421–477. **Invited**.
14. Shodipo, M.O., Gomez R., **Welicky R. L.**, Sikkel, P.C. (2019). Reply to the editor referencing to “Apparent kleptoparasitism in fish- parasitic gnathiid isopods”. *Parasitology Research*. 118:1683.
13. Shodipo, M.O., Gomez R., **Welicky R. L.**, Sikkel, P.C. (2019). Apparent kleptoparasitism in fish- parasitic gnathiid isopods. *Parasitology Research*. 118:653–655.
12. **Welicky, R. L.**, & Smit, N. J. (2018) Unique co-occurrence of two genera of cymothoid ectoparasitic isopods on the same individual fish host. *African Journal of Marine Science*. 40:467–469.
11. **Welicky, R. L.**, Parkyn, D.C., & Sikkel, P.C. (2018) Host dependent differences in measures of condition associated with *Anilocra* spp. parasitism in two coral reef fishes. *Environmental Biology of Fishes*. 101:1223–1234.
10. **Welicky, R.L.**, Ferriera, M., & Smit, N.J. (2018). Diurnal activity patterns and habitat use of the temporary fish ectoparasite, *Gnathia africana* Barnard, 1914, from the southern coast of South Africa. *Journal of the Marine Biological Association of the United Kingdom*. 98:1715–1723.
9. **Welicky, R.L.**, Hadfield, K.M., & Smit, N.J. (2017). Review and redescription of *Anilocra haemuli* (Crustacea: Isopoda: Cymothoidae) from the Caribbean using morphological and molecular techniques. *Zookeys* 663: 21–43.
8. **Welicky, R.L.**, De Swart, J., Gerber, R., Netherlands, E., & Smit, N.J. (2017). Drought-associated absence of alien invasive anchorworm, *Lernaea cyprinacea*, is related to healthier fish. *International Journal for Parasitology: Parasites and Wildlife* 2017: 1–9. **Invited**.
7. **Welicky, R.L.**, Demopoulos, A.W.J., & Sikkel, P.C. (2017) Stable carbon and nitrogen isotope analyses reveal resource use differences associated with *Anilocra* spp. parasitism in two coral reef fishes. *Marine Ecology* 38(2): 1-14.
6. Sikkel, P.C., **Welicky, R.L.**, Artim, J., McCammon A., Sellers, J.C., Coile, A.M., & Jenkins, W.G. (2017). Nocturnal migration reduces exposure to reef-based micropredators. *Bulletin of Marine Science*, 93(2): 475–489.

5. **Welicky, R.L.**, & Sikkel, P.C. (2015). Decreased movement related to parasite infection in a diel- migratory coral reef fish. *Behavioral Ecology and Sociobiology*, 69(9): 1437–1446.
4. Coile, A.M.C., **Welicky, R.L.**, & Sikkel, P.C. (2014). Female *Gnathia marleyi* (Isopoda: Gnathiidae) feeding on more susceptible fish hosts produce larger but not more offspring. *Parasitology Research*, 113(10): 3875–3880.
3. **Welicky, R. L.**, & Sikkel, P.C. (2014). Variation in occurrence of the fish-parasitic cymothoid isopod, *Anilocra haemuli* infecting French grunt (*Haemulon flavolineatum*) in the northeastern Caribbean. *Marine and Freshwater Research*, 65(11) 1018–1026. **Cover Feature.**
2. **Welicky, R. L.**, Cheney, K.L., Coile, A.M., McCammon, A., & Sikkel, P.C. (2013). The relationship between lunar periodicity and activity of fish-parasitic gnathiid isopods in the Caribbean. *Marine Biology*, 160(7)1607–1617.
1. **Welicky, R.L.**, Wyneken, J., & Noonburg, E.G. (2012). A retrospective analysis of sea turtle nest depredation patterns. *The Journal of Wildlife Management*, 76(2), 278–284.

### ***Under review***

- Claar, D.C., Williams, M.A., **Welicky, R.L.**, Mastick, N., Faiad, S.M., and Wood, C.L. Submitted. Estimating energy flux of *Schistocephalus solidus* in Alaskan sticklebacks as a case study in the metabolic theory of ecology. *Current Biology*.
- Ewing\*\*, M., **Welicky, R.L.**, Baldwin, C., Roberston, R., Tornabene, L. Trophic analysis of invasive lionfish (*Pterois volitans*) from deep reefs in the Caribbean. *Biological Invasions*.
- Mastick, N., **Welicky, R.L.**,...& Wood, C.L. Marine mammal recovery is associated with the resurgence of a nematode parasite. *Ecological Application*.
- \*\*Student led and mentored by RL Welicky

### **2023 Submission**

- Welicky, R.L.**, Leazer, K., Rolfe, T., Holtgrieve, G., & Wood, C.L. Predicting marine disease burden through the historical dietary shifts of fishes.
- Mastick, N., **Welicky, R.L.**, & Wood, C.L. Opening up a can of worms: Detecting historical changes in the risk of marine mammal disease burden via archival canned salmon.

## **TEACHING EXPERIENCE**

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### **Neumann University, Assistant Professor of Biology**

- 2022            General Biology II, Ecology and Evolution (Lecture and Laboratory)  
                   Introduction to Environmental Science (Lecture and Laboratory)  
                   Senior Capstone I (*Literature review paper and oral presentation*)  
                   Ecology (Lecture and Laboratory)

### **North–West University, Extraordinary Lecturer**

- 2020–            Estuarine and Nearshore Marine Ecology (Field component)

### **North–West University, Instructor of Record**

- 2018            Estuarine and Nearshore Marine Ecology (Classroom and field component)  
 2016–2017      Estuarine and Nearshore Marine Ecology (Field component)

### **Arkansas State University, Co-Instructor**

- 2015            Biological Inquiry  
 2014            Biology of Marine Mammals  
 2013            Biology of Animals, Honors section

### **Arkansas State University, Teaching Assistant**

2015 Comparative Ethology  
 2014 Biology of Plants

**Florida Atlantic University, Teaching Assistant**

2008–2010 Biological Principles  
 2008–2010 Biodiversity

**MENTORSHIP EXPERIENCE**

<i>Mentorship Role</i>	<i>Dates</i>	<i>Student Name</i>	<i>Student Affiliation</i>
NSF GFRP workshop**	2022	Emily Bishop	University of Washington
NSF GFRP workshop**	2022	Marcus Min	University of Washington
Undergraduate Research Assistant	2021–2022	Aspen Katla	University of Washington
Undergraduate Research Assistant	2020–Present	Megan Ewing	University of Washington
NSF GFRP workshop	2020	Hannah Merges	Ursinus College
NSF GFRP workshop	2020	Callum Backstrom	Villanova University
NSF GFRP workshop	2019	Kaitlyn Mitchell	University of Washington
NSF GFRP workshop	2019	Rachelle Johnson	University of Washington
MSc Student*	2017–2019	Hester Strauss	North–West University
Graduate Research Assistant	2018	Anja Greyling	North–West University
Undergraduate Research Assistant	2015	Samantha Richter	Arkansas State University
Undergraduate Research Assistant	2014	Gina Hendrick	Florida Gulf Coast University
Undergraduate Research Assistant	2014	Corbyn Belyea	Florida Gulf Coast University
Undergraduate Research Assistant	2013	Jared Gowen	Arkansas State University
Undergraduate Research Assistant	2013	Jamie Alvord	Arkansas State University
Undergraduate Research Assistant	2013	Ashley Elsihans	University of Florida

\*\*indicates student was a recipient of a **NSF Graduate Research Fellowship**

\***official supervisor** on record

**GRANTS (listed in USD)**

2019	International Council for the Exploration of the Sea & International Commission for the History of Oceanography, Early Career Scientist Grant	\$2,400
2019	University of Washington School of Aquatic and Fishery Sciences Travel Grant	\$1,000
2019–2022	Washington Research Foundation Postdoctoral Fellowship	\$217,500
2018	North-West University, Unit for Environmental Sciences and Management International Travel Award	\$2,130
2017	North-West University, Unit for Environmental Sciences and Management International Travel Award	\$1,530
2017	Claude Leon Foundation Postdoctoral Fellowship	\$43,000
2015	Lerner Gray Fund for Marine Research grant	\$2,000
2011–2012	National Science Foundation GK-12 Fellowship	\$30,000
2010– 2015	Research and conference travel support from Arkansas State University	\$3,700
2010– 2015	Arkansas Game and Fish Commission	\$10,000
2010	Florida Atlantic University Research Presentation Awards	\$1,600
2008–2009	Florida Atlantic University Education and Research Support	\$2,500
2007	Americorps Scholar	\$1,500
2000–2009	Presidential Scholar (undergraduate and graduate tuition assistance)	

**HONORS AND AWARDS**

- 2017 2<sup>nd</sup> place for best oral presentation at 5<sup>th</sup> Annual North-West University Tri-Campus Postdoctoral Fellows Conference
- 2016 2<sup>nd</sup> place for best oral presentation at 4<sup>th</sup> Annual North-West University Tri-Campus Postdoctoral Fellows Conference
- 2015 Graduate Student Research of the Year by A-State Graduate Student Council
- 2014 Invited to serve as a resident scientist for SeaTrek BVI Marine Science Camp Program
- 2014 Invited to implement a parasite-fish monitoring citizen science research project for Jost Van Dykes Preservation Society
- 2014 2<sup>nd</sup> place in the STEM graduate student division at Arkansas State University Research Symposium
- 2014 2<sup>nd</sup> place out of >260 talks at the 43<sup>rd</sup> Annual Benthic Ecology Meeting
- 2014 Finalist at the 3 Minute Thesis Regional Competition sponsored by The Council of Southern Graduate Schools
- 2013 1<sup>st</sup> place and audience choice in A-State's 3 Minute Thesis Competition

## INVITED PRESENTATIONS

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- 2020 **Seattle Aquarium**, Seattle, WA. Lightning Talk: "Alcohol: It's to remember, not to forget!"
- 2019 **National Science Foundation sponsored workshop, Understanding Freshwater Ecosystem Change through Analysis of Long-term Samples from Regional U.S. Fish Collections**. Fort Collins, CO. "From Frozen Solid to Frozen in Time: Determining the Validity of Compound Specific Stable Isotope Analysis of Museum Preserved Specimens.
- 2019 **Joint Meeting of Ichthyology and Herpetology: The Expanding Role of Natural History Collections Symposium**. Snowbird, Utah. "Natural history collections as time capsules: Assessing a century of change in disease burden and trophic level of marine fishes."
- 2015 **University of Florida**, Gainesville, FL "Infection by parasitic isopods influence host condition and movement patterns".
- 2014 **Metro Early College High School**, Virgin Islands Environmental Resource Station, "Are fish parasites vectors of disease?"
- 2014 **University of Maine**, Virgin Islands Environmental Resource Station "The role of *Anilocra haemuli* on the indirect and direct effects of host energetics and potential influence on coral reef food webs".
- 2012 **US Geological Survey Southeast Ecological Science Center**, Gainesville, Florida. "Lunar periodicity in activity of Caribbean gnathiid isopods: Does the moon matter?"

## CONTRIBUTED PRESENTATIONS

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- 2022 **15th International Congress of Parasitology**. Is the world wormier than it used to be? Answers from a new subdiscipline: the historical ecology of parasitism. \*PI lead
- 2022 **Ecological Society of America**. Opening a can of worms: Historical change in infectious disease risk for marine mammals revealed by archived canned salmon. \*student lead
- 2021 **Joint Meeting of Ichthyology and Herpetology**. Online. Trophic analysis of invasive lionfish (*Pterois volitans*) from deep reefs in the Caribbean.\*student lead
- 2021 **Ecology and Evolution of Infectious Diseases Meeting**. Online. Parasites of the past: Ninety years of change in the abundance of parasites infecting English sole (*Parophrys vetulus*) of Puget Sound, WA, USA
- 2021 **International Conference on the Applications of Stable Isotope Techniques to Ecological Studies (IsoEcol 2021 Interlude)**. Online. Increasing trophic position of Puget Sound English Sole (*Parophrys vetulus*) is driven by historical changes in the environment.

- 2020 **Ecological Society of America, Annual Meeting.** Online. Parasites of the past: Ninety years of change in the abundance of parasites infecting English sole (*Parophrys vetulus*) of Puget Sound, WA, USA
- 2020 **Ecological Society of America, Annual Meeting.** Online. Constant richness, shifting communities: 90 years of change in English sole (*Parophrys vetulus*) parasites
- 2019 **International Council for the Exploration of the Sea & International Commission for the History of Oceanography, Johan Hjort Symposium.** Bergen, Norway, oral. Is parasitism of fishes on the rise? Using natural history collections to quantify patterns of infection over a century-long timescale.
- 2018 **14<sup>th</sup> International Congress of Parasitology.** Daegu, South Korea, oral. Species complexes are complex: A redescription of *Anilocra capensis* Leach, 1818 and the description of 6 new species from Africa.
- 2018 **11th International Conference on the Applications of Stable Isotope Techniques to Ecological Studies (IsoEcol 2018),** Viña del Mar, Chile, oral. Do ‘tongue-biters’ bite their hosts? The use of stable carbon and nitrogen isotope analyses to describe the foraging strategies of differently attaching fish parasitic cymothoid isopods.
- 2017 **26<sup>th</sup> International Conference of the World Association for the Advancement of Veterinary Parasitology.** Kuala Lumpur, Malaysia, oral. Diurnal activity patterns of the temporary fish ectoparasite, *Gnathia africana* Barnard, 1914 (Isopoda, Gnathiidae), from the southern coast of South Africa.
- 2017 **3<sup>rd</sup> International Congress on Parasites of Wildlife,** Kruger, South Africa, poster. Using stable isotope analysis to compare the foraging ecology of differently-attaching cymothoid isopods.
- 2017 **3<sup>rd</sup> International Congress on Parasites of Wildlife,** Kruger, South Africa, oral. Drought-associated absence of alien invasive anchorworm, *Lernaea cyprinacea* (Copepoda: Lernaeidae), is related to changes in fish health.
- 2017 **5<sup>th</sup> Annual North-West University Tri-Campus Postdoctoral Fellows Conference,** Potchefstroom, South Africa, oral. Activity patterns of animals, parasites and postdocs.
- 2016 **4<sup>th</sup> Annual North-West University Tri-Campus Postdoctoral Fellows Conference,** Potchefstroom, South Africa, oral. Parasites- Who are they and why do we care?
- 2016 **45<sup>th</sup> Conference of the Parasitological Society of South Africa,** Cape Town, South Africa, oral. Review of the fish parasitic *Anilocra haemuli* (Crustacea: Isopoda: Cymothoidae) species complex from the Caribbean, using morphological and molecular techniques.
- 2016 **13<sup>th</sup> International Coral Reef Symposium,** Honolulu, HI, poster. Host energetic and stable isotope differences associated with parasitism in two coral reef fishes.
- 2015 **37<sup>th</sup> Association of the Marine Labs of the Caribbean meeting,** Willemstad, Curaçao, oral. Infection by cymothoid isopod, *Anilocra haemuli*, on French grunt (*Haemulon flavolineatum*), is associated with changes in host movement patterns.
- 2015 **44<sup>th</sup> Annual Benthic Ecology Meeting,** Quebec City, Canada, oral. Infection by cymothoid isopod, *Anilocra haemuli*, on French grunt (*Haemulon flavolineatum*), is associated with changes in host movement patterns.
- 2014 **Arkansas State University Research Symposium,** oral. Infection by cymothoid isopod, *Anilocra haemuli*, on French grunt (*Haemulon flavolineatum*), is associated with host social affiliation & aggregation size.
- 2014 **43<sup>rd</sup> Annual Benthic Ecology Meeting,** Jacksonville, FL, oral. Infection by cymothoid isopod, *Anilocra haemuli*, on French grunt (*Haemulon flavolineatum*), is associated with host social affiliation & aggregation size.
- 2013 **The Council of Southern Graduate Schools Three Minute Thesis Competition,** San Antonio, TX, oral. The role of *Anilocra haemuli* on the indirect and direct effects of host energetics, behavior, and trophic interactions.
- 2012 **41<sup>st</sup> Annual Benthic Ecology Meeting,** Norfolk, VA, oral. Assessing the role of ectoparasitic *Anilocra haemuli* on Caribbean reef trophic dynamics.
- 2011 **40<sup>th</sup> Annual Benthic Ecology Meeting,** Mobile, AL, poster. Lunar periodicity in activity of

- Caribbean gnathiid isopods.
- 2011 **40<sup>th</sup> Annual Benthic Ecology Meeting**, Mobile, AL, poster. Variation in Susceptibility of Caribbean Reef Fish to Parasitism by Gnathiid Isopods.
- 2010 **30<sup>th</sup> Annual International Sea Turtle Symposium**, Goa, India, poster. A retrospective analysis of sea turtle nest depredation patterns at Canaveral National Seashore, FL, USA.

### **SYNERGISTIC ACTIVITIES**

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- 2020– Review Editor, *Frontiers in Ecology and Evolution*, Editorial Board of Biogeography and Macroecology
- 2020 Participant in PR<sup>2</sup>ISM, Pedagogy and Research on Race, Identity, Social Justice and Meaning, professional development series, University of Washington
- 2020– Geochemist Expert, NSF Working Group for Understanding Freshwater Ecosystem Change through Analysis of Long-term Samples from Regional U.S. Fish Collections
- 2020 Pen-Pal, Letters to a Pre-Scientist program
- 2019– Skype a Scientist participant
- 2017–2018 Project Steering Committee Member, Water Research Commission of South Africa, for the project titled, Utilisation of open source software to find the hidden relationships in data sets and how this can be used to manage drinking water quality
- 2016–2018 *Angling for parasites*: Exchanging skillsets and knowledge with the South African Shore Angling Association Competitive team
- 2014–2015 Graduate Chair and President, Arkansas State University Student Research Council
- 2010–2015 Member, Graduate Student Association, Arkansas State University
- 2010–2015 Seminar Committee, College of Science and Mathematics, Arkansas State University

### **PEER REVIEW**

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*Frontiers in Ecology and the Environment* • *International Journal for Parasitology: Parasites and Wildlife* • *Biotropica* • *Limnology and Oceanography: Methods* • *Ecological Genetics and Genomics* • *Ecology and Evolution* • *Parasite Epidemiology and Control* • *Asian Fisheries Science Journal* • *Diseases of Aquatic Organisms* • *Physiology and Behaviour* • *Journal of the Marine Biological Association of the United Kingdom* • *Frontiers in Ecology and Evolution* • *Thalassas: An International Journal of Marine Sciences* • *Marine Biology Research*

### **MEMBERSHIPS**

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Ecological Society of America • American Society of Ichthyology and Herpetology • Parasitological Society of South Africa • Young Water Professionals of South Africa • International Society for Reef Studies