

CURRICULUM VITAE

University of Idaho

NAME: Mary S. Engels

DATE: 1-13-2020

RANK OR TITLE: Assistant Professor

DEPARTMENT: Natural Resources and Society

OFFICE LOCATION AND CAMPUS ZIP: CNR 19G, MS 1139

OFFICE PHONE: 208-885-5804

FAX:

EMAIL: engels@uidaho.edu

WEB: www.uidaho.edu/cnr/faculty/engels

DATE OF FIRST EMPLOYMENT AT UI: 2013

DATE OF TENURE: Untenured

DATE OF PRESENT RANK OR TITLE: 2019

EDUCATION BEYOND HIGH SCHOOL:

Degrees:

- 2012 – 2019** **Ph.D.:** Water Resources, University of Idaho, Moscow, Idaho
Advisors: Dr. Robert Heinse (Major), Dr. Jerry Failey, Dr. Arjan Meddens, Dr. Hillary Young.
Dissertation: Island Connections: Soils, Water, Vegetation, and Education in a Small Low Island Context.
- 2000 – 2003** **M.S.:** Geology and Geophysics, Department of Earth Sciences, University of Hawaii, Honolulu Hawaii
Advisors: Dr. Charles Fletcher (Major), Dr. Craig Glenn, Dr.
Thesis: Holocene Reef Accretion: Southwest Molokai, Hawaii
- 1996 – 2000** **B.A.:** Biology with distinction, Colorado College, Colorado
Advisor: Dr. Mark Wilson
Thesis: Investigations of *Pseudomonas fluorescens* strain A506 using RAPD analysis

Certificates and Licenses:

- 200 Ton Near Coastal Mate License
- Able Seaman with sail endorsement
- Wilderness First Responder

EXPERIENCE:

- 2018 Faculty Oceanographer/Program Coordinator for *Tsunagu: Tokio Marine Global Executive Program*, a leadership course run by Sea Education Association for Wharton Executive Education Program
- 2008-2017 Seagoing Faculty, Sea Education Association, Woods Hole MA
- 2015-2016 Co-Manager for The Confluence Project, University of Idaho, Moscow ID
- 2015 Teaching Assistant, University of Idaho, Moscow ID
- 2012-2014 GK12 Teaching Fellow, NSF, Moscow ID
- 2009-2012 Science Coordinator, Sea Education Association, Woods Hole MA
- 2007-2009 Assistant Science Coordinator, Sea Education Association, Woods Hole MA
- 2004-2007 Assistant Scientist, Sea Education Association, Woods Hole MA

2007 LTER volunteer with Maria Vernet, Cruise LMG07-01, Antarctica
 2001-2003 Graduate Research Assistant, University of Hawaii, Honolulu HI
 2000-2001 Research Project Support Specialist, Research Corp. of the University of Hawaii, Honolulu HI
 1998-2006 Company Leader/River Guide, Holiday Expeditions, Salt Lake City UT

TEACHING ACCOMPLISHMENTS: (Academic and Extension teaching)

Areas of Specialization: Environmental and marine science, experiential education, leadership and decision making.

Courses Taught:

University of Idaho-

NR 101: Exploring Natural Resources (co-taught, 2019)
 NRS 501: Contemporary Issues in Natural Resources and Society (2019)
 NRS 476: Environmental Program Management and Decision Making (2020)
 ENVS 400: Environmental Science Seminar (2015)

High School-

Earth Science Troy Jr./Sr. High School (2013-2014)
 Wildlife Science Troy Jr./Sr. High School (2013-2014)
 Ecology Lewiston High School (2012)
 Environmental Science Lewiston High School (2013)

Sea Education Association-

Wharton Leadership Venture Program Leadership at Sea (2011-2018)
 William-Mystic Sailing Program Oceanography (2011)
 High School Sailing Program Science at Sea (2009)
 CAS NS 221 Oceanography (2008)
 High School Sailing Program Oceanography of the Southern California Bight (2008)

Students Advised:

Undergraduate Students: (advised to completion of degree, number per year)

Benning, Cassandra (current, senior thesis)
 Brantz, Sierra (current, academic)
 Miller, Mikayla (current, academic)
 Lett, Taylor (current, academic)

Graduate Students:

Jingshan Lu (Ph.D, current, co-advising)

Materials Developed: (non-scholarship activity)

- Engels, M., and Nelson, L. (2016). 11 NOAA Lesson Plans Using Scientific Data Collected in the Pacific Marine National Monuments. <https://www.fisheries.noaa.gov/resource/educational-materials/using-scientific-data-collected-marine-national-monuments>

Workshops:

- Building Resilience through Water, Building Resilience for Water: The CRIDA Approach*, Moscow ID, 2019
- Envision Data: A workshop in effective data communication*, Moscow ID, 2017

Seminars:

- "Oh the places you will go: Preliminary thoughts on the fate of plastic debris from inland waters."* December 11th, 2019. Department of Natural Resources and Society Seminar. University of Idaho.

Invited Lectures:

- "From ship to shore: Communications from the front lines of marine debris research."* American Geophysical Union GIFT Workshop, San Francisco, December 14th 2015 (co-presented with Laura

Nelson).

- “*The Drinking Habits of Coconut Palms.*” Palouse-Clearwater Environmental Institute, Moscow ID, March 5th, 2015.
- “*Ocean Water Striders, the little-known world of Halobates.*” 39th Annual Conference on Sail Training and Tall Ships, Newport RI, January 30th 2012.

Honors and Awards:

- Idaho Environmental Educators Association Informal Educator of the Year (2017)

SCHOLARSHIP ACCOMPLISHMENTS: (Including scholarship of teaching and learning, artistic creativity, discovery, and application/integration)

Publications, Exhibitions, Performances, Recitals:

Peer Reviewed/Evaluated: (i.e. journals, articles, proceedings, abstracts, etc.)

Journal Articles:

Engels, M., Miller, B., Squires, A., Jennewein, J., and Eitel, K. (2019) The Confluence Approach: Developing scientific literacy through project-based learning and place-based education in the context of NGSS. *Electronic Journal of Science Education*, v. 23(3), p. 33-58

Squires, A., Jennewein, J., **Engels, M.**, Miller, B., and Eitel, K. 2016 Integrating Watershed Science in High School Classrooms: The Confluence Approach. *CLEARING*, 2016(2), p. 14-17

Deary, A., Moret-Ferguson, S., **Engels, M.**, Zettler, E., Jarslow, G., and Sancho, G. 2015 Influence of Central Pacific Oceanographic conditions on the potential vertical habitat of four tropical tuna species. *Pacific Science*, v. 69(4), p. 461-475

Engels, M., Correia, L., Piwinski, S., Cheng, L., and Zettler, E. 2014. Seasonal and decadal changes in distribution patterns of *Halobates* (Hemiptera:Gerridae) populations in the Eastern Tropical Pacific. *Marine Biology*, p.1-10

Engels, M.S., and Fletcher, C.H., 2008. Moloka'i - Two different types of reef growth in the past 8,000 years, in Field, M.E., Cochran, S.A., Logan, J.B., and Storlazzi, C.D., eds., *The coral reef of south Moloka'i, Hawai'i; Portrait of a sediment-threatened fringing reef*. U.S. Geological Survey Scientific Investigations Report 2007-5101, p. 37-40.

Engels, M.S., Fletcher, C.H., Field, M.E., Conger, C.L., and Bochicchio, C., 2008. Demise of reef-flat carbonate accumulation with late Holocene sea-level fall; evidence from Molokai Hawaii. *Coral Reefs*, v. 27, p. 991-996.

Fletcher, C.H., Bochicchio, C., Conger, C.L., **Engels, M.S.**, Feirstein, E.J., Frazer, L.N., Glenn, C.R., Grigg, R.W., Grossman, E.E., Harney, J.N., Isoun, E., Murray-Wallace, C.V., Rooney, J.J., Rubin, K.H., Sherman, C.E., and Vitousek, S., 2008. *Geology of Hawaii Reefs*, in Riegl, B., and Dodge, R., eds., *Coral Reefs of the U.S.A.* Springer-Verlag, p. 435-488.

Engels, M.S., Fletcher, C.H., Field, M.E., Storlazzi, C.D., Grossman, E.E., Rooney, J.J.B., Conger, C.L., and Glenn, C., 2004. Holocene reef accretion; southwest Molokai, Hawaii. *Journal of Sedimentary Research*, v. 74(2), p. 255-269.

Rooney, J.J.R., Fletcher, C.H., Grossman, E.E., **Engels, M.**, and Field, M.E. 2004. El Niño influence on Holocene reef accretion in Hawaii. *Pacific Science*, v. 58, no. 2, p. 305-324.

Paynter, C.K., Cortés, J., and **Engels, M.** 2001. Biomass, productivity and density of the seagrass

Thalassia testudinum at three sites in Cahuita National Park, Costa Rica. *Revista de Biología Tropical*, v. 49-2 p. 265-272.

Abstracts:

Engels, M., Heinse, R. Vegetative Repercussions: Coconuts and Soil Water Characteristics on Tropical Small Low Islands. SSSA International Soils Meeting, 6-9 Jan. 2019

Engels, M., Heinse, R. The small low island two-step: Mapping coconut legacies in the central Pacific Ocean. Abstract GC11F-0473, AGU Fall Meeting, Washington D.C., 10-14 Dec 2018

Trebitz, K., Cooper, C., Wakulich, K., **Engels, M.** Get them wet! Integrating STEM education with adopt-a-stream projects for experiential learning in water resources. Idaho Environmental Education Association Conference, 3-4 March 2017

Engels, M., Heinse, R. Mapping Soils Through the Trees: A Mixed Methods Approach for Small Low Islands, Abstract B43A-0581, AGU Fall Meeting, San Francisco, Calif., 12-16 Dec 2016.

Engels, M., Heinse, R. The sedimentary consequences of coastal coconut plantations. Abstract MG44B-1988, AGU Ocean Science, New Orleans, LA, 21-26 Feb 2015.

Engels, M., Heinse, R. Vegetative community control of freshwater availability: Phoenix Islands case study, Abstract H31G-0708, AGU Fall Meeting, San Francisco, Calif., 15-19 Dec 2014.

Joyce, P., Lavender Law, K., Zettler, E., Proskurowski, G., Goodwin, D., Lea, C., Schell, J., Siuda, A., Witting, J., Carruthers, EA., **Engels, M.**, DeForce, E. Linking research at sea to student audiences on shore. Abstract ED23D-05, AGU Fall Meeting, San Francisco, CA Dec 3-7 2012

Joyce, P., Carruthers, EA., **Engels, M.**, Goodwin, D., Law, KL., Lea, C., Schell, J., Siuda, A., Witting, J., Zettler, E. Sea Education Association's sailing research vessels: Innovative platforms for long-term research and education (Poster). Abstract OS51E-1916, AGU Fall Meeting, San Francisco, CA Dec 3-7 2012

Morét-Ferguson, S., Siuda, ANS., Proskurowski, G., Schell, JM., **Engels, M.**, Twichell, N., Zettler, ER. Biological communities in concentrated debris regions: who shares the ocean surface with plastic in the Eastern Pacific and North Atlantic? 5th International Marine Debris Conference, Honolulu, HI. March 2011.

Joyce, P., **Engels, M.**, Law, K., Lea, C., Morét-Ferguson, S., Proskurowski, G., Schell, J., Siuda, ANS., Wilber, RJ., Witting, J., Zettler E. Forty Years of At-sea Marine Debris Data Collection. 5th International Marine Debris Conference, Honolulu, HI. March 2011.

Lipke, C., **Engels, M.**, Twichell, N., Zettler, E. 2010 SeaBASS archive contributions by undergraduate students aboard Sea Education Association vessels, NASA Ocean Color Team Meeting, New Orleans

Deary, A.L., Moret, S., **Engels M.**, Zettler, E., Jaroslow, G.E., Sancho, G. 2010, Influence of Central Pacific oceanographic conditions on the equatorial habitats of four tuna species. *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract ED11A-06

Engels, M S; Piwinski, S K; Foley, J M; Lea, C E; Lavender, K L; Cheng, L; Distribution and annual variability of *Halobates* across the Eastern and Central Tropical Pacific. Ocean Sciences Meeting, Orlando, FL March 2-7, 2008

Fletcher, C.H., **Engels, M.S.**, Grossman, E.G., Rooney, J.J.R., and Sherman, C.E., 2006, Decoding the Geologic record of Holocene sea-level change in the Hawaiian Islands. Geological Society of America Abstracts with Programs, Vol. 38, No. 7, p. 92

Rooney, J.R., Fletcher, C.H., **Engels, M.S.**, Grossman, E.E., and Field, M.E., Variability of Hawaiian reef accretion and El Niño over the Holocene epoch. Tenth International Coral Reef Symposium, June 28-July 2, 2004, Okinawa, Japan.

Engels, M., Fletcher, C., Field, M., and Storlazzi, C., 2003, Rapid increase in relative sea level rate ca. 7.9 kyrs bp recorded at southwest Moloka'i, Hawai'i. Geophysical Research Abstracts, v. 5, 02016, 2003.

Wilson, M., Rademaker, J.L.W., Lindow, S.E., Henderson, M., Boyle, B., **Engels, M.**, Pugh, B., Sosa, S., Treat, E. Genetic variability among isolates of *Pseudomonas fluorescens* strain A506 recalled from laboratories around the world. 10th IUMS International Congress of Bacteriology, Paris, France, 2002.

Fletcher, C.H., **Engels, Mary**, Rooney, John, Field, Mike, Grossman, Eric G., Sherman, Clark E., Harney, Jodi N., and Murray-Wallace, Colin, 2002, Nature of Pleistocene carbonate shelf evolution and Holocene accretion: Hawaiian Islands. IGCP Project 437, Barbados, October 26 to November 2, 2002.

Other: (reports, proceedings, papers, citations and references, performances)

Refereed/Adjudicated (currently scheduled or submitted): (provide citations)

Peer Reviewed/Evaluated (currently scheduled or submitted):

Presentations and Other Creative Activities: (i.e. slide sets, web pages, video productions, etc., provide date and location)

Professional Meeting Papers, Workshops, Showings, Recitals: (provide date and location)

Patents: (provide title/description, patent number and date)

Grants and Contracts Awarded: (provide principal and co investigators, title, sponsor, funding dates, amount)

2016-2019	NASA Earth and Space Science Fellowship (NESSF), Award No. 16-EARTH16F-235 \$30,000, <i>Mapping Soils Through the Trees: A Small Low Island Case Study</i> (Robert Heinse, PI)
2016	UI Graduate and Professional Student Association TEGA Award, \$1,500
2016	University of Idaho Sustainability Center Grant, \$3,000
2016	University of Idaho Graduate and Professional Students Association Travel Award, \$700
2014	University of Idaho Graduate and Professional Students Association Travel Award, \$700
2013-2015	NOAA Education Grant, Award No NA13NMF4520094, \$15,012, Pacific Marine National Monuments: Dynamic systems for educating the next generation of stewards, (Mary Engels and Laura Nelson, Co-PIs)
2012-2014	National Science Foundation Graduate STEM Fellowship in K-12 Education
2010	National Science Foundation Grant, Award No. OCE-1036677, \$10,450, Sonar Electronics Replacement for Vessels Corwith Cramer and Robert Seamans, 2010-2011 (Erik Zettler, PI; Paul Joyce and Mary Engels, Co-PI)
2001-2003	Khaled bin Sultan Living Oceans Foundations Graduate Fellowship

Honors and Awards:

2009 The Coral Reef of South Moloka'i, Hawai'i—Portrait of a Sediment Threatened Fringing Reef (USGS SIR 2007-5101):

- Association of Earth Science Editors' Outstanding Publication of 2009 (print category)

- National Association of Government Communicator's Blue Pencil Award of Excellence for 2009 (technical communication)
- Honored by Hawaii State Senate and House of Representatives in Concurrent Resolution #2009-0916 SCR SMA-1

SERVICE:

Major Committee Assignments: (National, State, District, County, University, College, Departmental and dates)

NRS/ENVS Graduate Curriculum Committee (2019-2020)

Professional and Scholarly Organizations *(including memberships, committee assignments, editorial services, offices held and dates)*

- American Geophysical Union, Member (2003-Current)
- Soil Science Society of America, Member (2016-Current)

Outreach Service: *(Including popular press, interview articles, newspaper articles, workshops-seminars-tours organized, Extension impact statements)*

- Job shadow interview for eighth-grade student (Fall 2019)
- Meet with potential ENVS students

Community Service: *(non-academic unrelated to employment)*

Honors and Awards:

PROFESSIONAL DEVELOPMENT: *(workshops and seminars attended)*

Teaching:

Scholarship:

- Graduate Student Essentials: Organizing your Research and Data Management (Sept 2019)
- University of Idaho Proposal Development Academy (Spring 2020)

Outreach:

Administration/Management: