

Louis V. Plough

Assistant Professor

University of Maryland Center for Environmental Science

Horn Point Laboratory

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I. Education:

2011 Ph.D., University of Southern California, Los Angeles CA: Biology.

2003 A.B., Bowdoin College, Brunswick ME: Biology

II. Professional Background

2013–Present Assistant Professor, University of Maryland Center for Environmental Science, Horn Point Laboratory, Cambridge, MD

2011–2013 Postdoctoral Fellow, Clemson University, Clemson, SC

2010–2011 Oakley Fellow, University of Southern California, Los Angeles CA

2005–2011 Graduate research assistant, Marine Environmental Biology program, University of Southern California, Los Angeles CA

III. Awards and special recognition

2013 NSF Ocean Sciences postdoctoral fellow (*awarded \$170,000 fellowship but not taken*)

2009-2010 Outstanding teaching assistant award for Molecular Biology and Conservation genetics, Center for Excellence in Teaching, USC.

IV. Research

A. Areas of expertise

- Population and quantitative genetics of marine animals
- Oyster biology, aquaculture, and experimental breeding
- Genomics

B. Peer reviewed publications

Plough, L.V. Genetic load in marine animals. *Submitted* (Invited review, Current Zoology).

Plough, L.V. Population-genomic analysis of the blue crab, *Callinectes sapidus*, using genotyping-by-sequencing. *In review* (Journal of Shellfish Research, special issue on blue crab genomics).

Plough, L.V., G. Shin, D. Hedgecock 2016. Genetic inviability is a major driver of type-III survivorship in experimental families of a highly fecund marine bivalve. *Molecular Ecology*, early view; 10.1111/mec.13524.

Plough, L.V., A. Moran, and P. Marko. Density drives polyandry and relatedness influences paternal success in the gooseneck barnacle, *Pollicipes elegans*. *BMC Evolutionary Biology* 14: 81.

Plough, L.V. and P. Marko. 2014. Characterization of microsatellites and repeat density in the Gooseneck barnacle, *Pollicipes elegans*, using next generation sequencing. *J. of Heredity*, 105(1): 136-42.

Plough, L.V. 2012. Environmental stress increases selection against and dominance of deleterious mutations in inbred families of the Pacific oyster, *Crassostrea gigas*. *Molecular Ecology* 21(16): 3974-3987.

Derr, J.N., P.W. Hedrick, N.D. Halbert, **L. Plough**, L. K Dobson, J. King, C. Duncan, D. L. Hunter, N. D. Cohen, & D. Hedgecock. 2012. Phenotypic effects of cattle mitochondrial DNA in American Bison. *Conservation Biology*, 26(6): 1130-1136.

Plough, L.V. and D. Hedgecock, 2011. QTL analysis of stage-specific inbreeding depression in the Pacific oyster *Crassostrea gigas*. *Genetics* 189(4): 1473–1486.

C. Manuscripts in prep

Scharping, B., E. North, L. Plough. Salinity Tolerance of Early-Stage Oyster Larvae in the Choptank River, Chesapeake Bay, USA. *In prep*

Plough, L.V. and P. Marko. Population structure and demographic history of an anti-tropical barnacle, *Pollicipes elegans*. *In prep*

D. Research Grants and contracts

Current: Development of an Environmental DNA assay for Atlantic sturgeon. MD DNR sub-contract, 2016.

Current: A genetic approach to smart oyster restoration in Chesapeake Bay. Deerbrook heritable trust.

Pending: Assessment of Critical Habitats for Recovering the Chesapeake Bay Atlantic Sturgeon Distinct Population Segment—Phase II: A Collaborative Approach in Support of Management. NOAA, Section 6 species recovery grants.

Planned: *Genetic approach to breeding a low salinity oyster.* USDA-AFRI (resubmission- April 2016)

E. Seminars and Presentations

1. Invited seminars:

Salisbury University, Salisbury MD, October 2015

Smithsonian Environmental Research Center, Edgewater MD, May 2015

University of Maryland, Center for Environmental Science, Appalachian lab, Frostburg MD, December 2013

University of Maryland, Center for Environmental Science, IMET, Baltimore MD November 2013

University of Maryland, Center for Environmental Science, Chesapeake Biological lab, Solomon's Island, MD, October 2013

University of Delaware, Lewes DE, September 2013

Northwest Fisheries Science Center, NMFS/NOAA Seattle, WA March 2013

2. Presentations:

Plough, L.V. 2015. Population structure and demographic history of an anti-tropical barnacle, *Pollicipes elegans*. Benthic Ecology Meeting March 4-8, Quebec City, Canada.

Plough, L.V. 2014. Population genomic analyses of the Pacific gooseneck barnacle, *P. elegans*. Society for Integrative and Comparative Biology annual meeting. January 3-7, Austin TX.

Plough, L.V. 2013. High genetic load in wild families of the Pacific oyster: An explanation for high early mortality (type-III survivorship)? February 21-25, Aquaculture 2013, Nashville TN.

Plough, L.V. 2012. Paternity and relatedness in aggregations of the Gooseneck barnacle, *Pollicipes elegans*. South Eastern Population Ecology and Evolutionary Genetics Symposium, October 12-14, Clemson University.

Plough, L.V. and P. Marko, 2012. Paternity and relatedness in the Gooseneck barnacle, *Pollicipes elegans*. Evolution 2012, July 5-10, Ottawa, Ontario, Canada.

Plough, L.V. 2012. High metamorphic mortality and genetic variance in settlement timing in the Pacific oyster, *Crassostrea gigas*. 104th annual meeting of the National Shellfish Association, March 25th-29th, 2012, Seattle, WA.

Plough, L.V. and D. Hedgecock, 2012. High mortality at metamorphosis in the Pacific oyster, *Crassostrea gigas*. Society of Integrative and Comparative Biology annual meeting, January, 2012, Charleston, SC.

Plough, L.V. and D. Hedgecock, 2011. Genome-wide analysis of genetic load in the Pacific oyster *Crassostrea gigas*: Implications for larval mortality. National Shellfish Association annual meeting, March 2011, Baltimore MD.

Plough, L.V. and D. Hedgecock, 2010. Genotype by environment interaction affects genetic load in the Pacific oyster, *Crassostrea gigas*. *American Genetics Symposium in Conservation Genomics*, Hilo, HI.

Plough L.V., D. Anderson, and D. Hedgecock, 2010. Identification of seafood substitution in the Los Angeles marketplace using DNA sequencing. *Annual meeting of the Southern California Academy of Sciences*, (special session on sustainable fisheries), California State University, Los Angeles.

Plough, L.V., S. Vied, D. Hedgecock, 2010. Magnitude, ontogeny, and environmental lability of genetic load in the Pacific oyster *Crassostrea gigas*: insights from QTL mapping. *18th annual Plant and Animal Genome Conference*, San Diego CA.

Plough, L.V., S. Vied, D. Hedgecock, 2009. The effect of environment on inbreeding depression in the Pacific oyster, *Crassostrea gigas*. *Pacific Coast Shellfish Growers Association annual meeting*, Portland, OR.

Hedgecock, D., J. M. Klinck, E. N. Powell, **L.V. Plough**, and E. Hofmann. 2008. Insights into oyster population genetics from an Individual Based model. NSA Annual meeting, March 2008. (*Journal of Shellfish Research* 27:1015).

Plough, L.V., J. P. Curole. And D. Hedgecock, 2006 & 2008. Temporal Expression of genetic load in two families of the Pacific oyster *Crassostrea Gigas*. National Shellfisheries Association Annual Conference, Monterey, CA and Providence, RI.

F. Workshops attended

- i) East Coast Shellfish Breeding Consortium USDA-ARS, U. Rhode Island, December 2013
- ii) Software Carpentry Workshop, SESYNC, Annapolis MD, December 2013.

G. Active membership in scientific societies:

National Shellfisheries Association
American Genetics Association
European Society of Evolutionary Biology

V. Teaching and Training

Member, UMCES Graduate Faculty
Member, MEES Faculty and USM Inter-Institutional Graduate Faculty

A. University System of Maryland Courses Taught

MEES 621: Biological Oceanography (4-credit, team-taught, responsible for benthic ecology lectures)
MEES 698N: Ecological and Environmental Genomics (2-credit).

B. Past Teaching Experience

TA, Molecular Biology, BISC490 Fall 2009, University of Southern California
TA, Conservation Genetics, Spring 2007, 2009, 2010, University of Southern California
TA, Organismal Biology, Fall, 2004

VI. Student training

Thesis advisor and Post-graduate scholar sponsor:
Graduate students: Katherine Hornick (M.S., Expected graduation 2017), Laura Thomas (M.S., Expected graduation 2016)

Graduate Committees: Suzan Shahrestani (PhD, MEES program, Advisor; Hongsheng Bi, Chesapeake Biological Lab); Anna Priester (MS, MEES program, Advisor; Ken Paynter); Shadaesha Green (PhD, MEES program, Advisor; J. Sook Chung, IMET).

VII. Outreach and service

A. Outside University of Maryland:

Reviewer for a number of journals including: Journal of Experimental Marine Biology and Ecology, Genome Biology and Evolution, PLoS One, Marine Biology, International Journal of Aquaculture, G3 (genes, genomes, genetics).

Ad-hock reviewer for USDA and Washington State SeaGrant.

B. Inside University of Maryland:

MEES foundational ecology course development committee (2016-)

Faculty search committee for "Fish/Shellfish Pathologist", IMET (2015-)

UMCES high performance computing committee (2015-)

MD SeaGrant REU Selection Committee (2014, 2016)

REU Advisor for 2015: Salinity tolerance in oyster larvae (Bobby Scharping, Kansas State University), REU advisor for 2014: Cryptic Genetic Diversity in *Acartia tonsa* in Chesapeake Bay (Adrian Plummer, William Patterson University).

Faculty search committee for "Evolutionary Ecologist", 2015 (Appalachian lab)

Working Group 5, MEES self study, 2014-2015

C. Horn Point Laboratory committees:

Faculty search committee, "Oyster ecologist" (2016-)

Education committee (2014-)

Seminar Committee (2014-2015)

Faculty search committee, "Benthic ecologist" (2015)

Postdoctoral advising committee (Chair) (2014)