

Aimee L. Phillippi

53 Great Farm Road, Jackson, ME 04921
ph: (207) 722-3431; e-mail: aphillippi@unity.edu

Education	<p>1999 to 2005: Univ. Maine (Orono, ME 04469), received Ph.D. in Marine Biology.</p> <p>1996 to 1999: Univ. Massachusetts, Dartmouth (North Dartmouth, MA 02747), received M.S. in Marine Biology.</p> <p>1993 to 1996: Troy State University (Troy, AL 36082), received B.S. in Marine Biology.</p>
Administrative Experience	<p>2008 – present: Director for the Center for Biodiversity at Unity College</p> <p>2008-09: Chair of Faculty Planning Committee at Unity College</p>
Teaching Experience	<p>2007 – present: Assistant Professor of Conservation Biology at Unity College (90 Quaker Hill Road, Unity, ME 04988) primary teaching foci: Biology, Genetics, Interdisciplinary Environmental Stewardship Curriculum & Community-Based Learning courses</p> <p>2002 – 2007: Adjunct Professor (2002, 2004-05), Temporary Instructor (2005-06), and Term Professor (2006-07) at Unity College courses taught: Biology 1, Biology 2, Marine Biology, Intro to Marine Science, Genetics, Unity Experience</p> <p>2000 & 2001 (Fall): Teaching Assistant for University of Maine School of Marine Sciences—Semester by the Sea (Darling Marine Center, 193 Clarks Cove Road, Walpole, ME 04532)</p> <p>1999 (Spring): Visiting Lecturer for Univ. of Massachusetts Dartmouth Biology Department (285 Old Westport Road, North Dartmouth, MA 02747) course taught: Animal Behavior</p> <p>1996 to 1998: Teaching Assistant for Univ. of Massachusetts Dartmouth Biology Department courses taught: Biology of Organisms and Ecology labs</p>
Other Professional Experience & Involvement	<p>Editor for Association of Biology Laboratory Educators Journal, 2010-present</p> <p>Envirothon Maine Lead Judge for Current Issue (Biodiversity), 2008-09</p> <p>Advanced Placement Biology Exam Reader, 2007 & 2008</p> <p>Teaching summer workshops for high school math and science teachers, 2007 & 2008 Mathematical Modeling Meets Marine Biology – A field course that explores how high school teachers can create more integrative lessons in math and science using real data with basic statistics and modeling to examine complex biological relationships.</p>

**Research
Project
Involvement**

Impacts of rockweed harvesting on sediment structure and meiofauna community (2010-present)

Rockweed, primarily *Ascophyllum nodosum*, is harvested commercially for alginates, fertilizer, and food supplements in maritime Canada, Maine, Ireland, UK, France, Norway, and Iceland. Removal of rockweed is accomplished through hand cutting, raking, or with mechanical cutters on boats. Rockweed provides habitat for many organisms, prevents overheating and desiccation, cycles nutrients, and aids in sediment deposition. Using harvested and unharvested plots on Sears Island, Maine, I examine the changes to sediments and meiofauna from harvesting.

Benefits of delayed leaf abscission in the Beech tree (2010-present)

Most deciduous trees complete leaf abscission in the fall, dropping all non-photosynthetic leaves. A few species, including the American Beech (*Fagus grandifolia*), do not complete leaf abscission and retain their non-photosynthetic leaves until spring. Using a woodlot in Maine, I am experimentally removing leaves from Beech some Beech trees and following their growth rates and competition to determine if delayed leaf abscission provides an adaptive advantage.

Monitoring the effects of the invasive Asian shore crab, *Hemigrapsus sanguineus*, on the Schoodic Peninsula (2006-present)

Hemigrapsus sanguineus' northern boundary along the eastern U.S. is currently just below Downeast Maine. Because previous studies of the effects of this invasive crab began after its appearance in an area, this site offers a unique opportunity to monitor competitor and prey species population dynamics before, during, and after an invasion. Surveys of green crab (*Carcinus maenas*) and blue mussel (*Mytilus edulis*) populations are being conducted at six sites along the Schoodic Peninsula. In addition, this project involves a large public educational campaign. My two students and I developed outreach materials for the National Park Service to use in educating and involving park visitors.

Self-fertilization in relationship to dispersal pattern in ascidians (2000-2005)

This project examined the potential relationship between dispersal distance and role of self-fertilization in the reproductive biology of ascidians. The potential for self-fertilization was quantified with *in vitro* techniques and the likelihood of self-fertilization was examined using simulated "natural" conditions. Inbreeding depression (effects of self-fertilization) was measured for all three species up to the stage of F₁ reproductive capacity. Heritability of self-fertility for one species was also examined.

Population genetic structure of Atlantic herring (2000-2003)

Spawning populations of Atlantic herring in the Gulf of Maine were compared using microsatellite markers. An analysis was conducted to determine if individual spawning populations were genetically distinct.

Sperm longevity in the ascidian, *Botryllus schlosseri* (2000-2001)

Viability of aging sperm was measured for sperm at low densities using *in vivo* reproductive assays.

Reproductive cycle of the ascidian, *Botryllus schlosseri* (2000-2001)

Using *in vivo* fertilization assays, the timing of fertilization was examined in this cyclic, colonial brooding species. The developmental stages of the embryos were correlated with asexual cycle of the colony to determine real fertilization success based on ability to complete development.

**Research
Project
Involvement
cont.**

Biological control of oyster cage fouling (2000)

Various animal species were included in experimental oyster cages and degree of biofouling was documented over increasing time periods.

Field fertilization levels in the ascidian, *Botryllus schlosseri* (1999-2003)

Natural fertilization levels were examined in experimental animal colonies that were controlled for genetic relatedness, size, female reproductive capacity, and sexual cycle timing. Natural and experimental population densities (*i.e.*, sperm availability) were varied.

Recruitment patterns of fouling community organisms and anti-fouling techniques (1997-1999)

The abundance of shallow-water marine algal and invertebrate species was examined on experimental panels during recruitment seasons. The effectiveness of flocking as a recruitment deterrent was measured for a variety of fouling communities.

Japanese shore crab (*Hemigrapsus sanguineus*) ecology (1997-1999)

Crab populations and distributions were monitored at various field sites using transects and quadrats. Feeding preferences were also examined using both gut content analyses and laboratory experiments.

Burrowing behavior of the northern quahog, *Mercenaria mercenaria* (1996-1997)

Seasonal burrowing depth in natural mud flats was measured throughout the year.

**Publications
and Paper
Presentations**

Phillippi, A., 20???. Self-fertilization consequences depend on dispersal potential in three ascidian species. *in preparation*

Phillippi, A., 20???. The potentiality of self-fertilization as a reproductive strategy in ascidian species with different dispersal modes. *in preparation*

Phillippi, A. 2012. Enzyme explorations through cheesemaking: A qualitative approach for learning about enzyme function. *Tested Studies for Laboratory Teaching*. 32:?? (in press).

Phillippi, A. 2011. Impacts of rockweed harvesting on sediment structure and meiofauna communities. Presented at the Coastal Wetlands Conference for the New Hampshire Association of Natural Resource Scientists in Portsmouth, NH, 15 October 2011.

Phillippi, A. 2010. Edible Enzyme Essentials: Learning the properties of enzyme function through cheesemaking (and eating) – Poster at the Association for Biology Laboratory Educators conference in Halifax, NS, 22-25 June 2010.

Phillippi, A. and P.O. Yund. 2010. Atlantic herring metapopulation in the Gulf of Maine supported through use of microsatellites. Report for the Department of Marine Resources.

Phillippi, A., 2006. Monitoring the abundance and distribution of the invasive Asian shore crab, *Hemigrapsus sanguineus*, on the Schoodic Peninsula and its effects on intertidal crab and bivalve populations. Report submitted to Maine Sea Grant.

Phillippi, A., 2006. Does staying at home too much make you have sex with yourself? Invited presentation at the University of New England.

**Publications
and Paper
Presentations
cont.**

Phillippi, A., 2005. A comparative study of self-fertilization in the life histories of three ascidian species with contrasting dispersal patterns. Ph.D. Thesis at University of Maine.

Phillippi, A., E. Hamann, and P.O. Yund, 2004. Fertilization in an egg-brooding colonial ascidian does not vary with population density. *Biol. Bull.* 206:152-160.

Phillippi, A. and P.O. Yund, 2003. Self-fertilization and inbreeding depression in two ascidian species with contrasting dispersal patterns. Presented at the Benthic Ecology Meeting in Groton, CT.

Stewart-Savage, J., A. Phillippi, and P.O. Yund, 2001. Delayed insemination results in embryo mortality in a brooding ascidian. *Biol. Bull.* 201: 52-58.

Phillippi, A.L., N.J. O'Connor, A.F. Lewis, and Y.K. Kim, 2001. Surface flocking as a possible anti-biofoulant. *Aquaculture* 195:225-238.

Phillippi, A., J. Stewart-Savage, and P.O. Yund, 2000. The effect of timing of fertilization on fertilization levels and embryonic development. Presented at the Benthic Ecology Meeting in Wilmington, NC.

Yund, P.O. and A. Phillippi, 2000. Fertilization in experimental vs. natural populations of a colonial ascidian. Presented at the Benthic Ecology Meeting in Wilmington, NC.

Phillippi, A., 1999. Examination of seasonal recruitment patterns of fouling organisms in the Westport River estuary and the effects of flocking on recruitment. M.S. Thesis at Univ. Massachusetts Dartmouth.

Phillippi, A. and N.J. O'Connor, 1998. The effects of surface flocking on larval and algal recruitment patterns. Presented at the Benthic Ecology Meeting in Melbourne, FL.

**Grants and
Awards
Received**

Unity College Faculty Research Grant (2009)

Pilot study to develop sampling methods for rockweed harvesting impact study.

Maine Sea Grant, Development Project Grant (2006)

Monitoring the abundance and distribution of the invasive Asian shore crab, *Hemigrapsus sanguineus*, on the Schoodic Peninsula and its effects on intertidal crab and bivalve populations.

L.L. Bean Acadia Research Fellowship (2006)

Monitoring the abundance and distribution of the invasive Asian shore crab, *Hemigrapsus sanguineus*, on the Schoodic Peninsula and its effects on intertidal crab and bivalve populations.

Department of Marine Resources, Marine Studies Fellowship (2000)

Using microsatellites to distinguish breeding populations of Atlantic herring in the Gulf of Maine.

President's Thesis Award, University of Massachusetts System (1999)

**Professional
Society
Involvement**

Association of Biology Laboratory Educators

The Society for the Study of Evolution

Society for Conservation Biology, including Marine Division

Sigma Xi Scientific Research Society

National Center for Science Education

Maine Campus Compact