KECK GEOLOGY CONSORTIUM

PROCEEDINGS OF THE TWENTY-FIFTH ANNUAL KECK RESEARCH SYMPOSIUM IN GEOLOGY

April 2012
Amherst College, Amherst, MA

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2011-2012 PROJECTS

TECTONIC EVOLUTION OF THE CHUGACH-PRINCE WILLIAM TERRANE, SOUTH-CENTRAL ALASKA
Faculty: *JOHN GARVER,* Union College, *Cameron Davidson*, Carleton College
Students: *EMILY JOHNSON*, Whitman College, *BENJAMIN CARLSON*, Union College, *LUCY MINER*, Macalester College, *STEVEN ESPINOSA*, University of Texas-El Paso, *HANNAH HILBERT-WOLF*, Carleton College, *SARAH OLIVAS*, University of Texas-El Paso.

ORIGINS OF SINUOUS AND BRAIDED CHANNELS ON ASCRAEUS MONS, MARS
Faculty: *ANDREW DE WET*, Franklin & Marshall College, *JAKE BLEACHER*, NASA-GSFC, *BRENT GARRY*, Smithsonian
Students: *JULIA SIGNORELLA*, Franklin & Marshall College, *ANDREW COLLINS*, The College of Wooster, *ZACHARY SCHIERL*, Whitman College.

TROPICAL HOLOCENE CLIMATIC INSIGHTS FROM RECORDS OF VARIABILITY IN ANDEAN PALEOGLACIERS
Faculty: *DONALD RODBELL*, Union College, *NATHAN STANSELL*, Byrd Polar Research Center
Students: *CHRISTOPHER SEDLAK*, Ohio State University, *SASHA ROTHENBERG*, Union College, *EMMA CORONADO*, St. Lawrence University, *JESSICA TREANTON*, Colorado College.

EOCENE TECTONIC EVOLUTION OF THE TETON-ABSAROKA RANGES, WYOMING
Faculty: *JOHN CRADDOCK*. Macalester College, *DAVE MALONE*. Illinois State University
Students: *ANDREW KELLY*, Amherst College, *KATHRYN SCHROEDER*, Illinois State University, *MAREN MATHISEN*, Augustana College, *ALISON MACNAMEE*, Colgate University, *STUART KENDERES*, Western Kentucky University, *BEN KRASUSHAAR*

INTERDISCIPLINARY STUDIES IN THE CRITICAL ZONE, BOULDER CREEK CATCHMENT, FRONT RANGE, COLORADO
Faculty: *DAVID DETHIER*, Williams College
Students: JAMES WINKLER, University of Connecticut, SARAH *BEGANSKAS*, Amherst College, *ALEXANDRA HORNE*, Mt. Holyoke College

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SEDIMENT DYNAMICS OF THE LOWER CONNECTICUT RIVER
Faculty: *SUZANNE O'CONNELL* and *PETER PATTON*, Wesleyan University
Students: *MICHAEL CUTTLER*, Boston College, *ELIZABETH GEORGE*, Washington & Lee University, *JONATHON SCHNEYER*, University of Massaschusetts-Amherst, *TIRZAH ABBOTT*, Beloit College, *DANIELLE MARTIN*, Wesleyan University, *HANNAH BLATCHFORD*, Beloit College.

ANATOMY OF A MID-CRUSTAL SUTURE: PETROLOGY OF THE CENTRAL METASEDIMENTARY BELT BOUNDARY THRUST ZONE, GRENVILLE PROVINCE, ONTARIO
Faculty: *WILLIAM PECK,* Colgate University, *STEVE DUNN,* Mount Holyoke College, *MICHELLE MARKLEY*, Mount Holyoke College
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Keck Geology Consortium: Projects 2011-2012
Short Contributions— Connecticut River Project

ANTHROPOGENIC IMPACTS AND ENVIRONMENTAL CHANGES RECORDED IN THE IN THE DEPOSITIONAL HISTORY OF THE LOWER CONNECTICUT RIVER
Project Faculty: SUZANNE O'CONNELL Wesleyan University

FRESH-WATER DIATOMS AS BIOINDICATORS OF POLLUTION IN SELDEN COVE, CONNECTICUT RIVER
TIRZAH ABBOT**,** Beloit College
Research Advisor: Carl Mendelson

GEOCHEMICAL CHARACTERIZATION OF TIDAL COVES OF THE CONNECTICUT RIVER ESTUARY
HANNAH BLATCHFORD**,** Beloit College
Research Advisor: Carl Mendelson

VARIABILITY OF SUSPENDED-SEDIMENT DISTRIBUTION IN THE CONNECTICUT RIVER ESTUARY
MICHAEL CUTLER**,** Boston College
Research Advisor: Gail Kineke

RECONSTRUCTING ENVIRONMENTAL CHANGES IN THE LOWER CONNECTICUT RIVER USING DIATOMS
ELIZABETH JEAN GEORGE**,** Washington and Lee University
Research Advisor: David J. Harbor

INVASIVE FRESHWATER CLAM, CORBICULA FLUMINEA, HABITATS IN THE LOWER CONNECTICUT RIVER
DANIELLE MARTIN**,** Wesleyan University
Research Advisor: Suzanne O'Connell

COMPARING SEDIMENT DEPOSITION USING MERCURY INVENTORIES FOR BACK-WATER AND SALT MARSH ENVIRONMENTS
JONATHAN SCHNEYER**,** University of Massachusetts Amherst
Research Advisor: Jon Woodruff

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INVASIVE FRESHWATER CLAM, CORBICULA FLUMINEA, HABITATS IN THE LOWER CONNECTICUT RIVER

DANIELLE MARTIN, Wesleyan University
Research Advisor: Suzanne O'Connell

INTRODUCTION

Corbicula fluminea is a rapidly reproducing freshwater clam, also referred to as the Asian Clam. Native to Southeast Asia and Africa, today it is found throughout Asia, North America, South America, Europe and parts of Africa. It was suspected to have been brought to North America by immigrants from China intending to harvest the Asian Clam (Müller, 1774). The Asian Clam is known as a popular biofouler, costing companies millions of dollars annually.

In this study we tried to identify the factors which contribute to the life cycle of the Asian Clam in the Connecticut River. Specifically, we wanted to see if the clam had a preference as to where it lived on the river bedform. We used samples from four different areas in the Glastonbury Meanders of the Connecticut River (Ostfeld 2011). Bedforms were identified using a Datasonics SIS-1000 sidescan with sub-bottom profiler. Sample locations (Fig. 1) were identified from these images and grab samples were taken by scuba divers at specific locations on the bedform.

Lifestyle of *Corbicula Fluminea* Lifestyle

Because of its highly reproductive nature and low mortality rate, *C. fluminea* populations quickly come to dominate any environment that they are introduced into, even man-made structures. The Asian Clam is a popular biofouler, costing companies over one billion dollars annually in damages by blocking ventilation systems and water intake valves. The majority of studies have concluded that this species reproduces twice a year, taking place between late spring and early fall, but this can vary depending on the environment it's living in. A single clam can release an average of 400 of juveniles a day and up to 70,000 per year. It does not require a fish host to incubate its larvae. This greatly eliminates the problem of

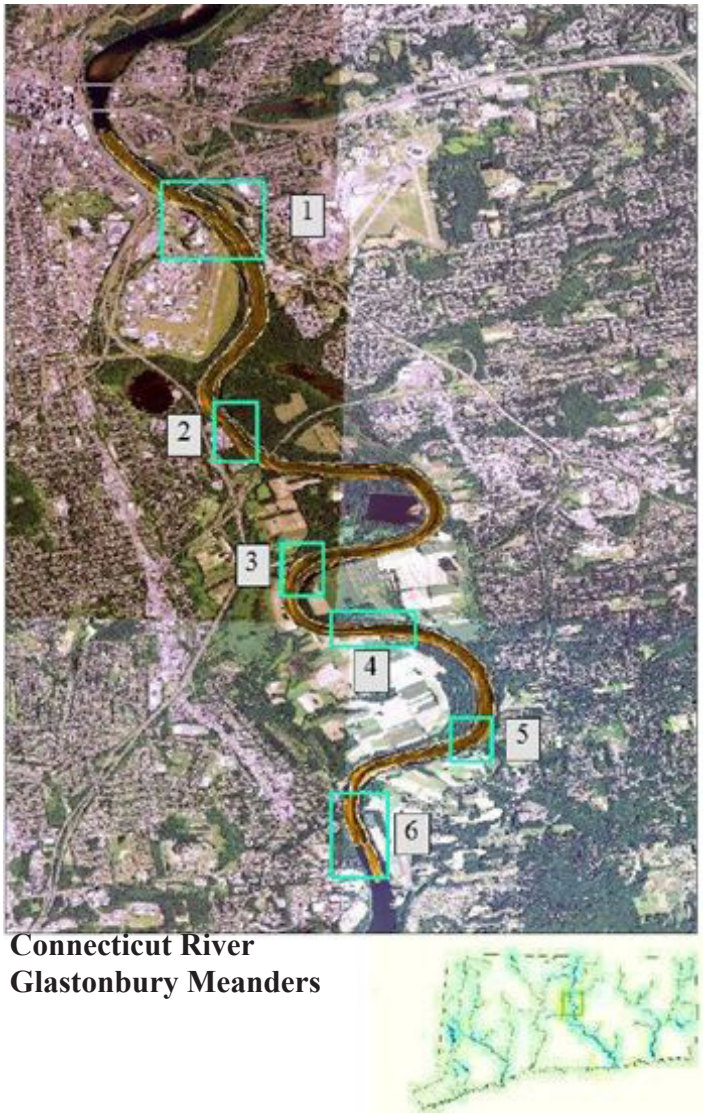

Figure 1. April 2010 sidescan survey highlighting six major bedform fields (Ostfeld 2011)

reduced transformation success of larvae. After the larvae are released into the water, measuring about 250 µm in dimension, they settle and bury into the substratum. After the water column release, juveniles anchor to sediments and vegetation using a mucilaginous byssal thread, a tough fibrous structure which is secreted and used to attach to substrate. Juveniles are also dispersed over long distances by turbulent flows.