

Snail foraging and temperature: tidal times data from University of Washington Friday Harbor Laboratories, Friday Harbor WA, Cantilever Point; 2010-2013 (Intertidal Temp Effects project)

Website: <https://www.bco-dmo.org/dataset/553783>

Version: 16 March 2015

Version Date: 2015-03-16

Project

» [The effects of temperature on ecological processes in a rocky intertidal community: a mechanistic approach](#)
(Intertidal Temp Effects)

Contributors	Affiliation	Role
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Dataset Description

Experimental shoreline data on snail foraging, temperature, and tidal cycling - Tidal Times Data

Observed tidal elevations:

NOAA station #9449880, Friday Harbor

Lat: 48 32.8N, Lon: 123 00.6W

Methods & Sampling

Experimental field experiment conducted in rocky intertidal. Please see related reference.

Related files and reference:

Hayford HA, SE Gilman, and E Carrington (2015) Foraging behavior minimizes heat exposure in a complex thermal landscape. Marine Ecology Progress Series. 518:165-175

Data Processing Description

See related files and reference:

Hayford HA, SE Gilman, and E Carrington (2015) Foraging behavior minimizes heat exposure in a complex thermal landscape. Marine Ecology Progress Series. 518:165-175

BCO-DMO Processing Notes

- Generated from original file "Fig 2 473867 HH 3-16-15.xlsx", Sheet: "Fig 2a" contributed by Hilary Hayford
- Approx Lat/Lon of experiment locale appended to enable data discovery in MapServer

- Date formatted as YYYYMMDD
- Parameter names edited to conform to BCO-DMO naming convention found at [Choosing Parameter Name](#)

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Data Files

File
Tidal_Times.csv (Comma Separated Values (.csv), 5.58 KB) MD5:21532162396f8e5ab7ebcfc11476d112 Primary data file for dataset ID 553783

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Parameters

Parameter	Description	Units
Lab_Id	Laboratory identifier where experiments were conducted	text
Lat	Latitude position of platform (South is negative)	decimal degrees
Lon	Longitude position of platform (West is negative)	decimal degrees
date	date of measurement/observation	YYYYMMDD
sunrise	time of sunrise 24 hour time PDT	HH:MM
solarnoon	time of solar noon 24 hour time PDT	HH:MM
sunset	time of sunset 24 hour time PDT	HH:MM
lowtide1start	time first low tide after midnight drops below +1.25 m 24 hour time PDT	HH:MM
lowtide1end	time first low tide after midnight rises above +1.25 m 24 hour time PDT	HH:MM
lowtide2start	time second low tide after midnight drops below +1.25 m 24 hour time PDT	HH:MM
lowtide2end	time second low tide after midnight rises above +1.25 m 24 hour time PDT	HH:MM
lowtide3start	time third low tide after midnight drops below +1.25 m 24 hour time PDT	HH:MM
lowtide3end	time third low tide after midnight rises above +1.25 m or low tide extends until midnight 24 hour time PDT	HH:MM

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Deployments

lab_UW_FHL_OAEL_Carrington

Website	https://www.bco-dmo.org/deployment/59061
Platform	lab UW FHL OAEL
Report	http://depts.washington.edu/fhl/oael.html
Start Date	2010-09-01
End Date	2013-08-31
Description	FHL Ocean Acidification Environmental Laboratory (OAEL) Overview FHL completed construction of a new 1500 sq. ft. experimental facility for ocean acidification research in summer 2011. The facility was funded by an award from NSF's Field Stations and Marine Laboratories (FSML) program, matching funds from the University of Washington, and private donors. The experimental facility currently includes an analytical chemistry laboratory, indoor mesocosms fed by a custom seawater-CO ₂ blending system and temperature control, laboratory space, as well as outdoor in-water mesocosms. Led by Dr. Emily Carrington, OAEL Director (ecarring@uw.edu), this state-of-the-art ocean acidification facility offers unique research and instructional opportunities for experimental manipulations with on-site monitoring of carbonate system parameters. FHL's location, facilities, and educational mission combine to make an ideal site for the experimental mesocosm and analytical facility.

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Project Information

The effects of temperature on ecological processes in a rocky intertidal community: a mechanistic approach (Intertidal Temp Effects)

Website: <http://depts.washington.edu/nucella/>

Coverage: San Juan Islands, Washington, USA

NSF Award Abstract:

Temperature influences organismal physiology, behavior, community interactions, and ecosystem function; yet rarely are the mechanisms understood. Accurately predicting the consequences of temperature for a species requires knowledge of: local climatic conditions, the relationship between climate and organismal body temperature, and the physiological and ecological consequences of body temperature. Few studies to date have explored all three areas concurrently. This project will examine in detail the biophysical, physiological, and ecological effects of temperature on a rocky intertidal community, a marine ecosystem that has emerged as a model system for studying the ecological consequences of temperature. It will focus on three major species, representative of rocky marine shore species worldwide: the barnacle, *Balanus glandula*, its predator *Nucella ostrina*, and the rockweed *Fucus gardneri*, which provides shelter for both species. The research is centered around three major goals: to develop biophysical models to explicitly link local climate to organismal body temperatures; to develop energy budget models to relate organismal body temperature to individual performance; and to identify the effect of temperature on interactions among the three species through a series of laboratory and field experiments. This research will provide a model system for understanding the effects of temperature on both individual performance and species interactions. It represents a significant contribution to understanding basic ecological questions, such as the role of temperature in structuring communities, and will also contribute to a more mechanistic understanding of the ecological consequences of future climate changes.

This research will promote a broader understanding of how temperature affects organisms and communities among scientists, students, and the general public in at least four ways. First, the research themes address a basic, yet poorly resolved, question in ecology: the influence of temperature on organismal performance and species interactions. This multiscale, integrated approach has the potential to transform current paradigms of how environmental change affects species and communities. Understanding the role of temperature in structuring communities is directly relevant to Biological Oceanography's special emphasis on biological diversity in marine systems. Second, the project is highly interdisciplinary by nature, and will forge new research partnerships among three female scientists (the PI, a postdoc, and a collaborator at an RUI

institution) and will provide new educational opportunities for several graduate and undergraduate students. The investigators will offer undergraduate research opportunities to underrepresented groups with their continued participation in the FHL Blinks Program to Enhance Diversity each summer, and expect to provide several REU experiences as well (separate NSF proposal resubmission pending). Third, The PI will incorporate research results and techniques into her undergraduate and graduate courses at FHL and the UW Seattle campus. The FHL undergraduate course integrates public outreach into the curriculum; these activities are part of FHL's broader Science Outreach Program that promotes science education and environmental stewardship. Finally, the results of this project will be incorporated into ongoing conservation and monitoring efforts conducted in the upper Puget Sound region by the University of Washington and the Friday Harbor Laboratories. The project will also enhance understanding of the ecological consequences of climate change, a significant societal problem.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-0824903

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