

Barnacle consumption of *Nucella lamellosa* that either displayed behavioral/morphological fear responses or not in the presence of predators within laboratory mesocosms at Bodega Marine Lab in 2019

Website: <https://www.bco-dmo.org/dataset/948228>

Data Type: experimental

Version: 1

Version Date: 2025-01-09

Project

» [Trophic consequences of ocean acidification: Intertidal sea star predators and their grazer prey](#) (BOAR Trophic)

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Abstract

To examine the impacts of fear removal on the strength of trophic cascades, we measured the number of barnacles (*Balanus glandula*.) consumed by *Nucella lamellosa* that either displayed either an anti-predatory response to its predator *Pisaster ochraceus* or ignored the predator. We tested the removal of two types of anti-predatory responses, a behavioral fear response and an inducible morphological defense, to also examine how the type of fear response can influence the strength of trophic cascades. The experiment was conducted within laboratory mesocosms at Bodega Marine Lab in 2019.

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Dataset Description

See "Related Datasets" section for other datasets to be published in Ng & Gaylord (2025, in-prep). These datasets are also listed on the "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

All datasets in this project can be viewed from the "Dataset Collections" of the project page <https://www.bco-dmo.org/project/712799>

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Related Publications

Ng, G., & Gaylord, B. (2025). Identifying the role of fear in trophic cascades. *Ecosphere*. Manuscript in preparation.

Results

Related Datasets

IsRelatedTo

Ng, G., Gaylord, B. (2025) **Algal consumption data from Tegula in the presence of the predator Cancer productus, displaying anti-predatory responses or not within mesocosms at Bodega Marine Lab in 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-02 <http://lod.bco-dmo.org/id/dataset/947753> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Algal consumption data from Tegula in the presence of the predator Pisaster ochraceus, displaying anti-predatory responses or not within mesocosms at Bodega Marine Lab in 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-02 <http://lod.bco-dmo.org/id/dataset/947757> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Behavioral data of Nucella lamellosa in the presence of predators within laboratory mesocosms at Bodega Marine Lab in 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-09 <http://lod.bco-dmo.org/id/dataset/948204> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Behavioral data of Tegula funebris in the presence of predator Cancer productus within laboratory mesocosms at Bodega Marine Lab in 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-09 <http://lod.bco-dmo.org/id/dataset/948210> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Behavioral data of Tegula funebris in the presence of predator Pisaster ochraceus within laboratory mesocosms at Bodega Marine Lab in 2018.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-09 <http://lod.bco-dmo.org/id/dataset/948216> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Nucella lamellosa morphometric measurements after induction in the presence of predatory Pisaster ochraceus at Bodega Marine Laboratory in 2019.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-09 <http://lod.bco-dmo.org/id/dataset/948240> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Predation data of tethered Nucella lamellosa in the presence of predators within laboratory mesocosms at Bodega Marine Lab in 2019.** Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-09 <http://lod.bco-dmo.org/id/dataset/948222> [[view at BCO-DMO](#)]
Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

Ng, G., Gaylord, B. (2025) **Predation data of tethered Tegula funebris in the presence of predators within laboratory mesocosms at Bodega Marine Lab in 2018.** Biological and Chemical

Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2025-01-09 <http://lod.bco-dmo.org/id/dataset/948234> [[view at BCO-DMO](#)]

Relationship Description: Data from experiments to be published in results publication Ng & Gaylord (2025, in-prep). See "Related-Resource" page for that results publication <https://www.bco-dmo.org/related-resource/948176>

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Parameters

Parameters for this dataset have not yet been identified

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Project Information

Trophic consequences of ocean acidification: Intertidal sea star predators and their grazer prey (BOAR Trophic)

Coverage: Central California coast, USA

NSF Award Abstract:

The absorption of human-produced carbon dioxide into the world's oceans is altering the chemistry of seawater, including decreasing its pH. Such changes, collectively called "ocean acidification", are expected to influence numerous types of sea creatures. This project examines how shifts in ocean pH affect animal behavior and thus interactions among species. It uses a case study system that involves sea star predators, snail grazers that they eat, and seaweeds consumed by the latter. The rocky-shore habitats where these organisms live have a long history of attention, and new findings from this work will further extend an already-large body of marine ecological knowledge. The project provides support for graduate and undergraduate students, including underrepresented students from a nearby community college. The project underpins the development of a new educational module for local K-12 schools. Findings will moreover be communicated to the public through the use of short film documentaries, as well as through established relationships with policy, management, and industry groups, and contacts with the media.

Ocean acidification is a global-scale perturbation. Most research on the topic, however, has examined effects on single species operating in isolation, leaving interactions among species underexplored. This project confronts this knowledge gap by considering how ocean acidification may shift predator-prey relationships through altered behavior. It targets as a model system sea stars, their gastropod grazer prey, and macroalgae consumed by the latter, via four lines of inquiry. 1) The project examines the functional response of the focal taxa to altered seawater chemistry, using experiments that target up to 16 discrete levels of pH. This experimental design is essential for identifying nonlinearities and tipping points. 2) The project addresses both consumptive and non-consumptive components of direct and indirect species interactions. The capacity of ocean acidification to influence such links is poorly known, and better understanding of this issue is a recognized priority. 3) The project combines controlled laboratory experiments with field trials that exploit tide pools and their unique pH signatures as natural mesocosms. Field tests of ocean acidification effects are relatively rare and are sorely needed. 4) A final research phase expands upon the above three components to address effects of ocean acidification on multiple additional taxa that interact in rocky intertidal systems, to provide a broad database that may have utility for future experiments or modeling.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1636191

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