

Quantified *Ocyropsis* spp. gut content observations from the Gulf Stream during June 2021 (Ocean Ctenos project)

Website: <https://www.bco-dmo.org/dataset/918719>

Data Type: Other Field Results

Version: 1

Version Date: 2024-01-26

Project

» [Collaborative Research: Quantifying the trophic roles of epipelagic ctenophores](#) (Ocean Ctenos)

Contributors	Affiliation	Role
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Abstract

Oceanic ctenophores are widespread predators on pelagic zooplankton. This data describes the daytime and nighttime gut contents of a ubiquitous oceanic ctenophore, *Ocyropsis* spp. as a component for evaluating trophic impact of this and other oceanic ctenophores in planktonic communities. In situ imaging of *Ocyropsis* spp. were made via blue-water (daytime) and black-water (nighttime) SCUBA diving from a small boat along the western edge of the Gulf Stream, 5 to 8 km off the coast of West Palm Beach, Florida (26° 43' 93" N, 79° 59' 15" W). In situ, scaled images of *Ocyropsis* spp. guts were used to determine prey content. These were evaluated by measuring their dimensions and that of the ctenophore to estimate gut fullness.

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Coverage

Location: Gulf Stream, 5 to 8 km off the coast of West Palm Beach, Florida (26° 43' 93" N, 79° 59' 15" W)

Spatial Extent: Lat:26.4393 Lon:-79.5915

Temporal Extent: 2021-06-10

Methods & Sampling

In situ images of *Ocyropsis* guts were taken by SCUBA divers in order to quantify gut contents of live animals in situ. These images were taken at various depths within the upper 15 meters of the water column at various times of day, over the course of multiple dives.

The data table differentiates day vs night time collection. High-resolution images taken using a Nikon 750 DLSR camera allowed estimation of gut fullness. ImageJ software aided the standardization of the estimations made from these image files.

BCO-DMO Processing Description

- Concatenated two separate files to represent both day and night time collection in one data table; an additional column added to indicate collection_time_of_day
- Units removed from column names
- Spaces removed from column names and replaced with underscores (" _")

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Data Files

File
918719_v1_ocyropsis_gut_contents.csv (Comma Separated Values (.csv), 74.45 KB) MD5:8ced9f05769256b7fd4ea83ac9c1687f
Primary data file for dataset ID 918719, version 1

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Related Publications

Potter, B., Corrales-Ugalde, M., Townsend, J. P., Colin, S. P., Sutherland, K. R., Costello, J. H., Collins, R., & Gemmell, B. J. (2023). Quantifying the feeding behavior and trophic impact of a widespread oceanic ctenophore. Scientific Reports, 13(1). <https://doi.org/10.1038/s41598-023-27955-z>
Results

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Related Datasets

IsRelatedTo

Costello, J. H., Colin, S., Gemmell, B. J., Sutherland, K. R. (2024) **Observed digestion times of Ocyropsis spp. collected from the Gulf Stream during June 2021 (Ocean Ctenos project)**. Biological and Chemical Oceanography Data Management Office (BCO-DMO). (Version 1) Version Date 2024-01-26 doi:10.26008/1912/bco-dmo.918678.1 [[view at BCO-DMO](#)]

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Parameters

Parameter	Description	Units
Species	Species - Ocyropsis spp.	unitless
Date	Sample measurement date	unitless
collection_time_of_day	Sample measurement time of day; value will either be "day" or "night"	unitless
Latitude	Latitude of observation site in decimal degrees, A positive value indicates a Northern coordinate	decimal degrees
Longitude	Longitude of observation site in decimal degrees; a negative value indicates a Western coordinate	decimal degrees
ctenophore	Individual ctenophore ID, 20 total	unitless
ctenophore_length	Total measured length of ctenophore including lobes	millimeters (mm)
gut_area	Area of ctenophore gut measured from image	millimeters squared (mm ²)
number_of_pre	Total counted number of prey measured in the gut	prey
prey_item	Indiviudal prey ID within a ctenophore	unitless
prey_length	Length of prey measured from image	millimeters (mm)
prey_width	Width of prey measured from image	millimeters (mm)
prey_area	Area of prey measured from image	millimeters squared (mm ²)
gut_fullness	Gut fullness (%) for an individual ctenophore	unitless

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Instruments

Dataset-specific Instrument Name	Nikon 750 DSLR camera
Generic Instrument Name	Camera
Dataset-specific Description	High-resolution images using a Nikon 750 DSLR camera allowed estimation of gut fullness.
Generic Instrument Description	All types of photographic equipment including stills, video, film and digital systems.

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Project Information

Collaborative Research: Quantifying the trophic roles of epipelagic ctenophores (Ocean Ctenos)

NSF Award Abstract:

Ctenophores are gelatinous predators found throughout the world's oceans, and their predatory impacts can profoundly affect planktonic communities. A variety of methods employed by marine scientists have converged to demonstrate the key roles these animals play in determining planktonic composition and energy flows in coastal systems. The role of oceanic ctenophores, however, is still sparsely documented. Oceanic ctenophores are characterized by more delicate gelatinous bodies that usually do not survive capture by conventional nets and do not perform naturally when transferred from their wall-less oceanic environment to shipboard bottles and containers. The difficulty in obtaining quantitative measurements on feeding by oceanic species has limited the ability to understand the role of these organisms in oceanic systems. This project will transform the capabilities to quantify key processes of oceanic ctenophores with in situ studies. However, ctenophores are not the only delicate oceanic animals that will benefit from developing advanced in situ methods. Similar techniques and approaches can be applied to other groups such as cnidarian siphonophores, pelagic molluscs, marine snow and large protists such as radiolarians. Additionally, successful application of these methods by divers will open the path for applications on Remotely Operated Vehicles (ROVs) and other submersibles that can greatly extend the depth and range of the techniques. Training of new scientists will involve postdoctoral, graduate and undergraduates. The investigators will broaden public science outreach by using contacts with media and aquariums involved in public education to communicate new findings to a wide public audience.

This project will address the challenge of obtaining information about the role and activity of pelagic oceanic ctenophores by adapting methods developed in the laboratory and employing them in a field setting. The investigators have adapted high-speed, high-resolution imaging and fluid-mechanics methods to the animal's in situ environment. These methods are particularly appropriate for field measurements of animals that are intractable for controlled laboratory studies and must be studied in situ, such as oceanic ctenophores. The goal in this project will be to apply high-speed, in situ particle image velocimetry (PIV) and bright field imaging systems to study a suite of oceanic ctenophores possessing distinct morphologies with potentially variable trophic roles to quantify: a) their flow and feeding mechanics; b) their ingestion rates and prey selection; and c) their trophic impacts. The results will enable inclusion of about the activities of these widespread and important animals in models of epipelagic food web dynamics.

This award reflects NSF's statutory mission and has been deemed worthy of support through evaluation using the Foundation's intellectual merit and broader impacts review criteria.

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Funding

Funding Source	Award
NSF Division of Ocean Sciences (NSF OCE)	OCE-1830015
NSF Division of Ocean Sciences (NSF OCE)	OCE-1829945
NSF Division of Ocean Sciences (NSF OCE)	OCE-1829913
NSF Division of Ocean Sciences (NSF OCE)	OCE-1829932

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