# Depth, temperature, and salinity measurements collected during drifting in situ chamber (DISC) deployments in Southwater Caye, Belize between June and August of 2016

**Website**: https://www.bco-dmo.org/dataset/739541
**Data Type**: Other Field Results
**Version**: 1
**Version Date**: 2018-07-02

**Project**
» Collaborative Research: The Role of Larval Orientation Behavior in Determining Population Connectivity (Elacatinus Dispersal II)



| Contributors | Affiliation | Role |
|---|---|---|
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## Coverage

**Spatial Extent**: **N**:16.84478 **E**:-88.0661 **S**:16.79985 **W**:-88.0817
**Temporal Extent**: 2016-06-14 - 2016-08-18

## Dataset Description

Related Datasets (data collection during same DISC deployments):
* DISC: Data package https://www.bco-dmo.org/dataset/739221
* DISC: Temperature and Light https://www.bco-dmo.org/dataset/739220
* DISC: Deployment, environmental, and larval behavior information https://www.bco-dmo.org/dataset/739595

### Methods & Sampling

The CTD logger was attached to the DISC during deployments. The DISC and CTD logger were left in the water for the duration of a day's deployments, which lasted anywhere from one to 5 hours, depending on the day. The DISC was sometimes lowered/raised between 9 meters and 18 meters, depending on the scheduled depth of deployments for that day.

A CTD logger was added to the data collection process in the middle of the field season. There was only one logger, and it was attached to DISC A.

### Data Processing Description

Star-Oddi software "SeaStar" was used to generate these data.  No further processing was done.

BCO-DMO Data Manager Processing Notes:
* added a conventional header with dataset name, PI name, version date
* modified parameter names to conform with BCO-DMO naming conventions
* blank values in this dataset are displayed as "nd" for "no data."  nd is the default missing data identifier in the BCO-DMO system.
* added ISO timestamp (UTC)
* added start/stop lat/lons from deployment information.

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## Data Files

| File |
|---|
| **ctd_log_toplevel.csv** (Comma Separated Values (.csv), 741.00 KB) MD5:24754b69ca5a84c6c9a4770068e87a47<br>Primary data file for dataset ID 739541 |

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## Parameters

| Parameter | Description | Units |
|---|---|---|
| disc_id | DISC (drifting in-situ chamber) identifier | unitless |
| deploy_id | Deployment identifier | unitless |
| dateTime | Date and time (UTC-6; Belize local time) in format "yyyy-mm-dd HH:MM:SS" from the hobo logger's record | unitless |
| depth | Depth (depth of logger) | meters |
| temperature | Water temperature | Degrees Celsius |
| salinity | Water salinity | Practical Salinity Units (PSU) |
| ISO_DateTime_UTC | Timestamp (UTC) in standard ISO 8601:2004(E) format YYYY-mm-ddTHH:MM:SSZ | unitless |
| deploy_depth | Nominal depth of deployment | meters |
| lat_start | Deployment start latitude | decimal degrees |
| lon_start | Deployment end longitude | decimal degrees |
| lat_end | Deployment start latitude | decimal degrees |
| lon_end | Deployment end longitude | decimal degrees |

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## Deployments

### DISC_Deployments_Belize

| | |
|---|---|
| **Website** | https://www.bco-dmo.org/deployment/740951 |
| **Platform** | Belize_reefs |
| **Start Date** | 2016-06-03 |
| **End Date** | 2016-08-18 |

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## Project Information

**Collaborative Research: The Role of Larval Orientation Behavior in Determining Population Connectivity (Elacatinus Dispersal II)**

**Coverage**: Belizean Barrier Reef System

*Description from NSF award abstract:*
Understanding how far young fish move away from their parents is a major goal of marine ecology because this dispersal can make connections between distinct populations and thus influence population size and dynamics. Understanding the drivers of population dynamics is, in turn, essential for effective fisheries management. Marine ecologists have used two different approaches to understand how fish populations are connected: genetic methods that measure connectivity and oceanographic models that predict connectivity. There is, however, a mismatch between the predictions of oceanographic models and the observations of genetic methods. It is thought that this mismatch is caused by the behavior of the young, or larval, fish. The objective of this research is to study the orientation capabilities of larval fish in the wild throughout development and under a variety of environmental conditions to see if the gap between observations and predictions of population connectivity can be resolved. The project will have broader impacts in three key areas: integration of research and teaching by training young scientists at multiple levels; broadening participation of undergraduates from underrepresented groups; and wide dissemination of results through development of a website with information and resources in English and Spanish.

The overall objective of the research is to investigate the role of larval orientation behavior throughout ontogeny in determining population connectivity. This will be done using the neon goby, Elacatinus lori, as a model system in Belize. The choice of study system is motivated by the fact that direct genetic methods have already been used to describe the complete dispersal kernel for this species, and these observations indicate that dispersal is less extensive than predicted by a high-resolution biophysical model; E. lori can be reared in the lab from hatching to settlement providing a reliable source of larvae of all ages for proposed experiments; and a new, proven behavioral observation platform, the Drifting In Situ Chamber (DISC), allows measurements of larval orientation behavior in open water. The project has three specific objectives: to understand ontogenetic changes in larval orientation capabilities by correlating larval orientation behavior with developmental sensory anatomy; to analyze variation in the precision of larval orientation in different environmental contexts through ontogeny; and to test alternative hypotheses for the goal of larval orientation behavior, i.e., to determine where larvae are heading as they develop.

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## Funding

| Funding Source | Award |
|---|---|
| NSF Division of Ocean Sciences (NSF OCE) | OCE-1459156 |

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