# Specimen log from Jason dives collected from the R/V Atlantis (AT21-02) cruise in the Barbados seeps, Intra-American Sea during June 2012 (SEEPC project)

**Website**: https://www.bco-dmo.org/dataset/615468
**Data Type**: Cruise Results
**Version**:
**Version Date**: 2016-05-10

**Project**
» Connectivity in western Atlantic seep populations: Oceanographic and life-history processes underlying genetic structure (SEEPC)

| Contributors | Affiliation | Role |
|---|---|---|
| Van Dover, Cindy | Duke University | Principal Investigator |
| Copley, Nancy | Woods Hole Oceanographic Institution (WHOI BCO-DMO) | BCO-DMO Data Manager |

## Table of Contents


- Dataset Description
  - Methods & Sampling
  - Data Processing Description
- Data Files
- Parameters
- Instruments
- Deployments
- Project Information
- Funding


## Dataset Description

**Related Dataset: AT21-02: Jason dive event log**: http://www.bco-dmo.org/dataset/614998

### Methods & Sampling

Sampling was performed by ROV Jason in the Barbados Accretionary Prism area using the following methods:
- Grab - using the claw of either port or starboard manipulator to pick up the sample
- Push core - used to collect sediment core samples, or invertebrates residing in the sediment
- Slurp - use of a vacuum system to collect sample from the seafloor or water column

### Data Processing Description

**BCO-DMO Processing:**

- added conventional header with dataset name, PI name, version date, reference information
- renamed parameters to BCO-DMO standard
- replaced blank cells with nd or 0 (flags)
- replaced commas with : or ;
- replaced blanks with underscores, except for comments column
- sorted by genus, species, dive_id, sample_id, fixative

[ table of contents | back to top ]

## Data Files

| File |
|---|
| **AT2102_sample_log.csv** (Comma Separated Values (.csv), 252.16 KB)<br>MD5:2d9d54e47d90c47bb4f33db328efae43<br>Primary data file for dataset ID 615468 |

[ table of contents | back to top ]

## Parameters

| Parameter | Description | Units |
|---|---|---|
| taxon_1 | higher taxonomic group | unitless |
| taxon_2 | genus; or if unknown then the common name or closest taxonomic unit | unitless |
| species | species; or if unknown then morphotype ID/note | unitless |
| dive_id | unique ID for each Jason dive | unitless |
| specimen | unique ID assigned to each specimen taken during the cruise (an individual or bulk/group) | unitless |
| container | unique ID assigned to each sample container; may contain an entire specimen or a subsample of a specimen | unitless |
| event | event number | unitless |
| voucher_flag | x indicates that the container contains voucher material | unitless |
| tissue | indicates sources of specimen material/tissue placed in the container | unitless |
| fixative | material or method used to initially stabilize material in the container prior to ethanol preservation. The exception is frozen material which does not get transferred to ethanol | unitless |
| photo_flag | x indicates that a photo of the specimen was taken prior to fixation | unitless |
| comments | free text comments | unitless |

[ table of contents | back to top ]

## Instruments

| | |
|---|---|
| **Dataset-specific Instrument Name** | |
| **Generic Instrument Name** | Alvin Slurp Sampler |
| **Generic Instrument Description** | Small and large capacity vacuum pump samplers. May have single or multiple chambers. See http://www.whoi.edu/main/alvin/subsystems/optional-scientific-samplers |

| | |
|---|---|
| **Dataset-specific Instrument Name** | |
| **Generic Instrument Name** | Alvin tube core |
| **Generic Instrument Description** | A plastic tube, about 40 cm (16 inches) long, is pushed into the sediment by Alvin's manipulator arm to collect a sediment core. |

| | |
|---|---|
| **Dataset-specific Instrument Name** | Jason |
| **Generic Instrument Name** | ROV Jason |
| **Generic Instrument Description** | The Remotely Operated Vehicle (ROV) Jason is operated by the Deep Submergence Laboratory (DSL) at Woods Hole Oceanographic Institution (WHOI). WHOI engineers and scientists designed and built the ROV Jason to give scientists access to the seafloor that didn't require them leaving the deck of the ship. Jason is a two-body ROV system. A 10-kilometer (6-mile) fiber-optic cable delivers electrical power and commands from the ship through Medea and down to Jason, which then returns data and live video imagery. Medea serves as a shock absorber, buffering Jason from the movements of the ship, while providing lighting and a bird's eye view of the ROV during seafloor operations. During each dive (deployment of the ROV), Jason pilots and scientists work from a control room on the ship to monitor Jason's instruments and video while maneuvering the vehicle and optionally performing a variety of sampling activities. Jason is equipped with sonar imagers, water samplers, video and still cameras, and lighting gear. Jason's manipulator arms collect samples of rock, sediment, or marine life and place them in the vehicle's basket or on "elevator" platforms that float heavier loads to the surface. More information is available from the operator site at URL. |

[ table of contents | back to top ]

## Deployments

**AT21-02**

| | |
|---|---|
| **Website** | https://www.bco-dmo.org/deployment/535929 |
| **Platform** | R/V Atlantis |
| **Report** | http://dmoserv3.whoi.edu/data_docs/SEEPC/AT21-02_CruiseREPORT.pdf |
| **Start Date** | 2012-06-01 |
| **End Date** | 2012-06-17 |
| **Description** | Cruise information and original data are available from the NSF R2R data catalog. http://www.whoi.edu/cruiseplanning/synopsis.do?id=1942 The primary objective of the SeepC Project is to advance our general knowledge of connectivity in the deep sea using taxa found at seeps as model systems. The focus is on species and processes occurring in the Intra-American Sea (including the Caribbean, Gulf of Mexico, and eastern seaboard of the US), with attention to oceanographic circulation, life histories, and genetics. Science objectives (from the WHOI Cruise Planning Synopsis): Mooring recoveries and sampling at 3 Barbados seep sites (El Pilar, Orenoque A, Orenoque B) plus MOCNESS tows and some mapping (multibeam, CHIRP). We may add sample sites if we are able to undertake an advance SENTRY survey in the region (pending request). Our aim would be to add new sites separated by as much as 150-200 km max along a depth gradient and along an isobath. Use of SENTRY would allow us to undertake precision sampling of known sites, 1 to 1.5 days per station at each of 6 to 8 seep stations. This is part of the Seep Connectivity Project funded by NSF to investigate historical and contemporary linkages among Barbados, Gulf of Mexico, and Blake Ridge seep species. Activities at each site: 1) Sub-bottom profiling to locate seep areas 2) MOCNESS tows for larval sampling 3) Mooring recoveries (current meter, 2 sediment/larval traps per mooring) 4) Intensive sampling of seep fauna for genetic and reproduction studies |

[ table of contents | back to top ]

## Project Information

**Connectivity in western Atlantic seep populations: Oceanographic and life-history processes underlying genetic structure (SEEPC)**

**Coverage**: Western Atlantic, Gulf of Mexico, Intra-American Sea

This project will evaluate connectivity on spatial scales that match those at which vent systems are being studied (3500 km), with a set of nested seeps (within the Barbados system) within which connectivity can be explored at more local spatial scales (30 to 130 km), and with species that span depth (600 m to 3600 m) and geographic ranges (30 km to 3500 km) and that have diverse life-history characteristics. Five deep-sea seep systems in the Intra- American Sea (IAS) are targeted: Blake Ridge, Florida Escarpment, Alaminos Canyon, Brine Pool, Barbados (El Pilar, Orenoque A, Orenoque B). The primary objective is to advance our general knowledge of connectivity in the deep sea. The focus is on species and processes occurring in the IAS, with attention to oceanographic circulation, life histories, and genetics. Questions that apply in shallow-water systems motivate this study:

1. What phylogeographic breaks occur in the system? It is important to distinguish between phylogeographic history and connectivity. A phylogeographic break with no shared alleles between populations implies a long history of isolation or possibly cryptic speciation.

2. Are populations connected by ongoing migration? This is the fundamental question about connectivity and the scale of genetic variation in marine species with planktonic larvae.

3. What biophysical processes underlie observed connectivities? Biological processes (e.g., larval distributions in the water column, timing of reproduction, and planktonic larval duration) and physical processes of transport and dispersion interact to determine connectivity.

The oceanographic model for the IAS will be improved and coupled to a Lagrangian larval transport model. The field program includes time-series sampling of larvae at seeps with records of current velocities, water column sampling to determine larval distribution potential, shipboard studies of larval biology and behavior, and sampling of benthic target species. Phylogenetic and population genetic tools will be used to explore historical and contemporary gene flow. Iterative interactions among the science teams will advance our understanding of connectivity in the deep sea and to develop effective and best methods for hypothesis testing under the constraints of working in a relatively inaccessible environment. Since their discovery, deep-sea chemosynthetic ecosystems have been novel systems within which to test the generality of paradigms developed for shallow-water species. This study will explore scale-dependent biodiversity and recruitment dynamics in deep-sea seep communities, and will identify key factors underlying population persistence and maintenance of biodiversity in these patchy systems.

Google Earth map showing positions of stations, CTD, XBT, multibeam locations (KMZ file dlownload)

[ table of contents | back to top ]

## Funding


| Funding Source | Award |
|---|---|
| NSF Division of Ocean Sciences (NSF OCE) | OCE-1031050 |


[ table of contents | back to top ]