

Specimen log from HOV Alvin dives collected from the R/V Atlantis (Alvin AT26-15) cruise in the Gulf of Mexico and Florida Escarpment during July 2015 (SEEPC project)

Website: <https://www.bco-dmo.org/dataset/615510>

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)

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Dataset Description

Related Dataset: [AT29-04: Alvin dive event log](#): <http://www.bco-dmo.org/dataset/615127>

Methods & Sampling

Sampling was performed by HOV Alvin in the Western Atlantic Margin of the US (WAM) 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; removed trailing blanks
- replaced '?' with 'maybe'
- replaced '<' with 'lt_'; replaced '>' with 'gt_'
- sorted by taxon_1, taxon_2, species, dive_id, sample_id

Data Files

File
AT2904_sample_log.csv (Comma Separated Values (.csv), 113.69 KB) MD5:ad6ce4f40ce7291509db293e251790c7
Primary data file for dataset ID 615510

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 HOV 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
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

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.

Deployments

AT26-15

Website	https://www.bco-dmo.org/deployment/517377
Platform	R/V Atlantis
Start Date	2014-05-21
End Date	2014-06-14
Description	Start: Depart Gulfport, MS 05/21/2014 End: Arrive St. Petersburg, FL 06/14/2014 The AT26-15 cruise was conducted as part of the project "Connectivity in western Atlantic seep populations: Oceanographic and life-history processes underlying genetic structure" (SeepC) funded by NSF OCE-1031050. The cruise included coordinated deployments of DSV Alvin and AUV Sentry. Science objectives (from the WHOI Cruise Planning Synopsis): 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. Our efforts include improving the oceanographic model for the IAS near the seabed using current data from moorings at several depths and locations and coupling this model to a Lagrangian larval transport model. We stress the importance of iterative interactions among the science teams to advance our understanding of connectivity in the deep sea through descriptive and hypothesis-driven research. We will develop effective and best methods for hypothesis testing under the constraints of working in a relatively inaccessible environment and will build capacity in understanding connectivity in deep-sea systems.

AT26-15 Alvin Dives

Website	https://www.bco-dmo.org/deployment/615110
Platform	Alvin
Start Date	2014-05-22
End Date	2014-06-14
Description	Listing of Alvin dives on AT26-15 (pdf) for SEEPC project - with links to further metadata.

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 download)

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Funding

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

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