Specimen log from Alvin dives collected from the R/V Atlantis (Alvin AT26-15) cruise in the Gulf of Mexico and Florida Escarpment during May and June 2014 (SEEPC project)

Website: https://www.bco-dmo.org/dataset/615488
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: AT26-15: Alvin dive event log: http://www.bco-dmo.org/dataset/615017

Methods & Sampling

Sampling was performed by HOV Alvin in the Gulf of Mexico and Florida Escarpment 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 ; and removed / in sampling_method
- replaced blanks with underscores; removed trailing blanks
- replaced '?' with 'maybe'
- replaced '<' with lt_; replaced '>' with 'gt_'
- sorted by taxon, genus, species, dive_id, sample_id

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Data Files

File
AT2615_sample_log.csv (Comma Separated Values (.csv), 446.63 KB) MD5:35fa053ceded34595dd356b8beb6ce35 Primary data file for dataset ID 615488

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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

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Instruments

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	
Generic Instrument Name	HOV Alvin Slurp Samplers
Generic Instrument Description	Small and large capacity vacuum pump samplers. May have single or multiple chambers. Slurp Samplers (from https://ndsf.whoi.edu/alvin/systems/) The slurp samplers consist of a collection chamber and a hydraulically powered water pump. A nozzle with a tube connected to it is held and moved by a manipulator while water is pulled into the nozzle by the pump. The water travels down the tube into the collection chamber, and then goes through a mesh screen before going through the pump itself. Biological samples are sucked into the nozzle and deposited in the collection chamber. They are kept from going into the pump by the mesh screen. The screen can be changed for coarser or finer mesh as needed. Two styles of collection chamber are available; single chamber and 5-chamber. Single chamber: a large cylindrical single collection chamber into which all samples will be deposited. Water weight 2 lbs, 27 lbs full of water. 5-chamber: five separate cylindrical collection chambers of 4.5 inch ID x 11.5 inch height. One chamber is used at a time and the chambers are rotated by a hydraulic actuator mounted to the bottom of the 5-chamber assembly. Water weight 10 lbs, 140 lbs full of water.

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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	HOV 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.

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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)

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Funding

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

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