

DEEPEND

DEEP PELAGIC NEKTON DYNAMICS OF THE GULF OF MEXICO

Cruise Report *R/V Point Sur* cruise DP10



Photo credit: Danté Fenolio

22 April – 02 May 2025

DEEPEND DP10 Cruise Participants on the R/V *Point Sur*



From Left to Right; Top to Bottom: Kevin Boswell, Jon Moore, Rosanna Milligan, Tracey Sutton, Sidney Trimble, Zyan Brown, Stormie Collins, Pedro Perez, Isabel Romero, Bianca Ruiz, Emma Schnidler, Danté Fenolio and Ian Areford. Not pictured: Heather Judkins.

Report on
DEEPEND Cruise DP10
22 April – 02 May 2025; USM R/V *Point Sur*, Gulfport, MS
Chief Scientist: Tracey Sutton

This report was prepared by: Sidney Trimble, April Cook, Tracey Sutton, Kevin Boswell, Heather Bracken-Grissom, Jon Moore, Heather Judkins, Isabel Romero, Tammy Frank, Pedro Peres, Matthew Johnston, Ian Areford, Stormie Collins, and Danté Fenolio.

A DEEPEND (Deep Pelagic Nekton Dynamics)
Consortium Report

Available online from the DEEPEND website,
www.deependconsortium.org



Acknowledgements

This was the tenth DEEPEND cruise. The success of this cruise was due to the outstanding efforts of the Captain and Crew of the R/V *Point Sur*, LUMCON Marine Operations, the University of Southern Mississippi Department of Marine Science, Continental Shelf Associates, Inc., Sea-Gear Corporation, the San Antonio Zoo, and all members of the science party. This cruise was supported by the National Oceanic and Atmospheric Administration's RESTORE Science Program award NA24NOSX451C0002-T1-01 to Nova Southeastern University.

Table of Contents

1	Purpose of Cruise.....	6
2	Narrative.....	7
3	Operations and Protocols.....	10
3.1	Midwater Trawling.....	10
3.2	Permitting.....	11
3.3	Hydroacoustics.....	11
3.4	CTD Profiling.....	12
3.5	Water Collection.....	Error! Bookmark not defined. 11
3.6	Sampling on Station.....	13
4	Sample Processing Protocol.....	13
4.1	Nekton, Micronekton, and Macroplankton Samples.....	13
4.2	Water Column Structure at the Stations.....	14
5	Individual Project Reports.....	1
5.1	MOCNESS Sampling.....	1
5.2	Faunal Accounts.....	2
5.2.1	Crustacea.....	2
5.2.2	Mollusca.....	2
5.2.3	Fishes.....	3
5.3	Genetic/Genomic Analyses.....	3
5.3.1	Genetic Diversity and Connectivity Crustaceans and Fish.....	3
5.3.2	Deep-sea Crustaceans and Fish Barcodes.....	6
5.3.3	Fish Transcriptomics and Genomes.....	7
5.4	Photophore Pattern Study.....	Error! Bookmark not defined.
5.5	Polycyclic Aromatic Hydrocarbon Analysis.....	8
5.5.1	Crustaceans.....	8
5.5.2	Cephalopods and Other Pelagic Mollusca.....	Error! Bookmark not defined.
5.5.3	Fishes.....	9
5.5.4	Gelatinous Zooplankton.....	10
5.6	Seabird and Marine Mammal Observations.....	10
5.7	Hydroacoustic Data.....	11
5.8	Physical Oceanographic Data Collected.....	12
5.8.1	CTD and Water Samples.....	12

6 Outreach Activities..... 13

6.1 Dr. Danté Fenolio/DEEPEND Photography..... 13

6.2 DEEPEND Website 13

Appendix A. Bird, shark, and marine mammal observations..... 14

1 Purpose of Cruise

The Deep-Pelagic Nekton Dynamics Consortium (DEEPEND) is a research and management-advisement program supported by the NOAA RESTORE Science Program. The focus of the DEEPEND Consortium is to develop a quantitative, taxonomically comprehensive assessment of the deep-pelagic faunal assemblages of the Gulf of Mexico (writ large, including the Gulf of America, international waters, and the Mexican and Cuban EEZs; Gulf hereafter), including examination of longer-term consequences of the *Deepwater Horizon* oil spill on these assemblages. The project goals of this tenth (DP10) cruise include: 1) quantitative assessment of deep-pelagic nekton (fishes, macrocrustaceans, and cephalopods) assemblage structure, abundance, and distribution; 2) quantitative acoustic profiling of the fine- and mesoscale distributions of oceanic nekton; 3) collection of nekton samples for genomic and biogeochemical analyses ; 4) collection of specimens for organismal biology studies (e.g., trophic and reproductive ecology, CT scan-based morphological studies); 5) collection of in situ biophysical oceanographic data for community analyses; 6) collection of samples to build a high-quality deep-pelagic eDNA reference library, 7) collection of photographic and video content for scientific and Education & Outreach efforts; and 8) an ad hoc seabird survey (as time allowed). The strategy for DP10 was to sample seven time-series stations north and inside of a mesoscale cyclonic eddy centered at 28°N, 88°W, both day and night, with three of these stations sampled twice, once using the ‘standard’ DEEPEND depth bins and once using sampling bins dictated by the concurrent depths of deep-scattering layers. Sampling was completed with a multiple opening closing net and environmental sensing system (MOCNESS) equipped with a 10 m² opening (MOC10).

As with previous DEEPEND cruises, sampling/sensing was conducted aboard the R/V *Point Sur*. Scientific participants on this cruise (see frontispiece) included: expert taxonomists in the major deep-pelagic nekton faunal groups, acousticians, geneticists, a petrogeochemist, technicians, and graduate students. Specimens were identified at sea using traditional taxonomic approaches. After the cruise, molecular analyses and expert taxonomic evaluation and description of any putative new records or undescribed species will be completed in association with the DEEPEND Taxonomic Working Groups.

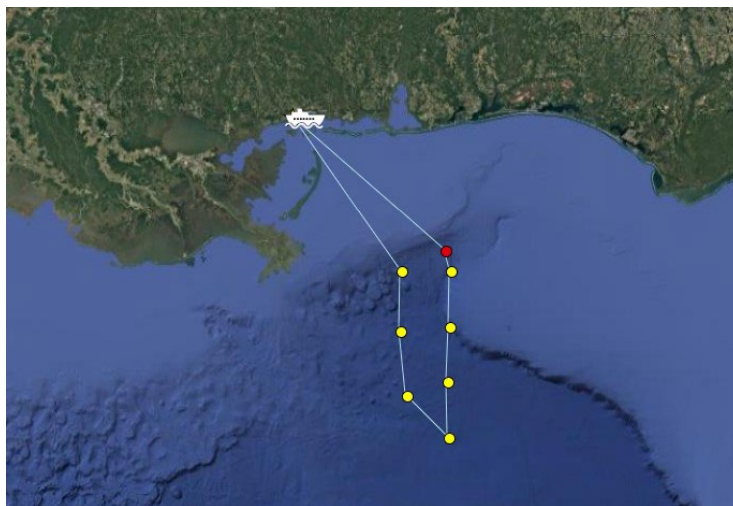


Figure 1. Cruise track of DEEPEND cruise DP10 (22 April - 02 May 2025) relative to seafloor topography.

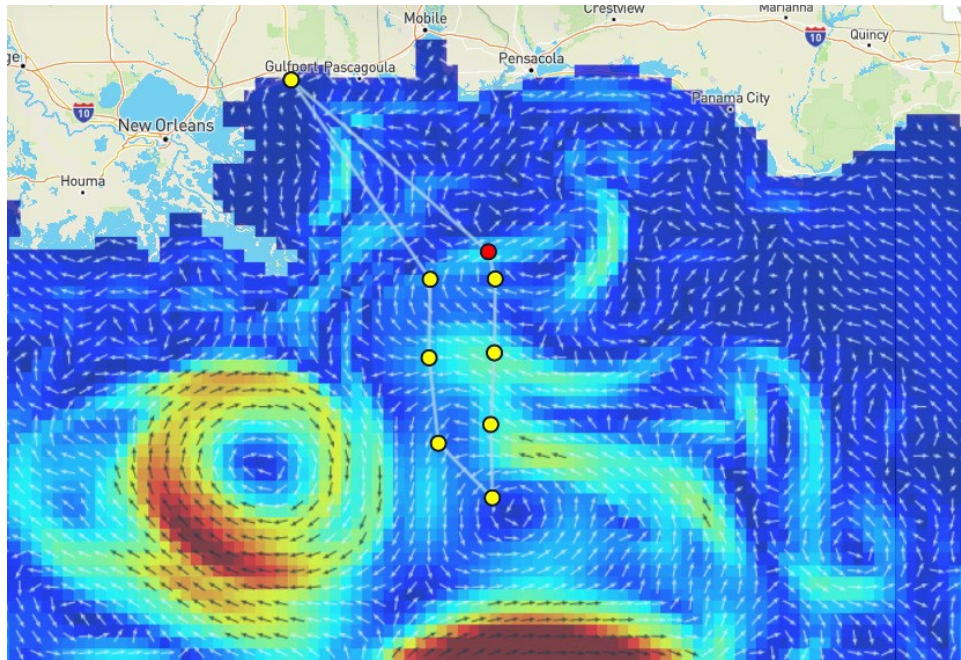


Figure 2. Cruise track of DEEPEND cruise DP10 (22 April - 02 May 2025) relative to mesoscale oceanography.

2 Narrative

Ship's cruise number: PS_25_17_Sutton
 DEEPEND cruise number: DP10

All cruise activity times are presented as 24-h clock notation in Central Daylight Time (UTC – 5 h). A map of standardized station names and station orders are presented in Figure 2. The naming conventions for trawl samples remained the same as those used in DP01, DP02, DP03 DP04, DP05, DP06, DP07, DP08, and DP09:

Example: DP10-22APR25-MOC10-B175N-260-N0.

Key: Cruise No. – Date – Gear Type - SEAMAP station code + (N = night, D = day) - Trawl No. - Net No.

Trawl numbers are cumulatively increased across all sampling years and are not restarted for each cruise.

22 April 2025: We left Gulfport at 0001 and arrived at Station B175 (**29°14.793'N, 87°55.158'W**) at 1130 and began an acoustic transect at the 100 m isobath. A night CTD cast (CTD_DP10_B175N) of station B175 was conducted at 19:00 to a maximum depth of 1501 m. A series of bottles were placed on the CTD hardware to collect water that is to later be processed for contaminants. The CTD was brought back on deck at 20:49. The MOCNESS gear was deployed at 21:00 for Trawl 260 at station B175 and fished to a maximum depth of 1500 m. Nets 2-5 fished standardized depth bins (net 0: 0-1500 m, net 1: 1500-1000 m, net 2:1000-800 m, net 3: 800-600 m, net 4: 600-200 m, net 5: 200-0 m)

while nets 0 and 1 only fished to 1500 m.

23 April 2025: The MOC-10 gear was recovered from station B175 at 02:30. The codends were emptied and processing began. A daytime CTD (CTD_DP10_B175D) was cast at 07:00 with a maximum depth of 1502 m. The MOCNESS gear was deployed at 09:00 for Trawl 261 at station B175 to a maximum depth of 1500 m and followed the same net pattern as the previous B175 trawl. Nets 4 and 5 were classified as MEAT due to both nets only fishing partially open. The MOCNESS was recovered at 14:30. A CTD was cast at 19:07 (CTD_DP10_B175N2) to a maximum depth of 1500 m. The MOCNESS was deployed at 21:30 at station B175 for trawl 262. The MOCNESS followed a tow-yo pattern (net 0: 0-100 M, net 1: 100-400 m, net 2: 400-500 m, net 3: 500-650 m, net 4: 650-650 m, net 5: 650-0 m) to target scattering layers and fished to a maximum depth of (1000 m). Net 4 was fished in an oblique pattern to reach the maximum depth of 1000 m and returning to the initial opening depth (650 m) before the deployment of net 5.

24 April 2025: The MOC-10 gear was retrieved at 02:30 and codends were emptied and processing began. Dr. Heather Judkins disembarked from the *R/V Point Sur* and made her way back to Gulfport, MS at 09:30. The MOCNESS was deployed for trawl 263 at 10:00. MOC-10 gear was retrieved at 16:00 to begin processing while the ship transited to station B252. Arrived at station B252 at 18:58 (**28°30.2'N, 87°30.13'W**). The CTD (CTD_DP10_B252N) was deployed at 19:00 with a maximum deployment depth of 1498 m. Bottles were once again attached to the CTD gear to collect water samples for contaminants. The MOCNESS was deployed at 21:03 (Trawl 264) to a maximum depth of 1500 m. Nets 2-5 fished standardized depth bins (net 0: 0-1500 m, net 1: 1500-1000 m, net 2: 1000-800 m, net 3: 800-600 m, net 4: 600-200 m, net 5: 200-0 m) while nets 0 and 1 only fished to 1500 m.

25 April 2025: The MOC-10 gear was recovered on deck at 02:15. A daytime CTD (CTD_DP10_B252D) was cast at 07:00 to a maximum depth of 1500 m. The MOCNESS was deployed at station B252 at 09:00 (Trawl 265). Nets 2-5 fished standardized depth bins (net 0: 0-1500 m, net 1: 1500-1000 m, net 2: 1000-800 m, net 3: 800-600 m, net 4: 600-200 m, net 5: 200-0 m) while nets 0 and 1 only fished to 1500m. The MOC-10 gear was retrieved at 14:15 and codends were emptied and processing began. A nighttime CTD (CTD_DP10_B252N2) was cast at 19:00 to a maximum depth of 1500 m. The MOCNESS was deployed at 21:00 for trawl 266 at station B252 and fished in a tow-yo pattern (net 0: 0-100 M, net 1: 100-400 m, net 2: 400-500 m, net 3: 500-650 m, net 4: 650-650 m, net 5: 650-0 m) with an oblique tow for net 4 and a maximum depth of 1000 m.

26 April 2025: The MOC-10 gear was recovered on deck at 02:30 and a daytime CTD cast (CTD_DP10_B252D2) was conducted at 07:00 to a maximum depth of 404 m. The MOCNESS was deployed for a daytime tow at station B252 at 09:00 (Trawl 267). A tow-yo pattern was fished (net 0: 0-100 M, net 1: 100-400 m, net 2: 400-500 m, net 3: 500-650 m, net 4: 650-650 m, net 5: 650-0 m) to match the previous B252 nighttime tow-yo trawl. The MOC-10 gear was recovered and on deck at 14:30 and samples were processed during transit to station B287 (**28°00.70'N, 87°31.00'W**). A CTD cast (CTD_DP10_B287N) was conducted at 18:37 on station B287 to a maximum depth of 1501 m. The MOCNESS was deployed at 21:00 (Trawl 268) and followed the standard fishing pattern, fishing down to a maximum depth of 1500 m.

27 April 2025: The MOC-10 gear was recovered and on deck at 02:30. A daytime CTD cast (CTD_DP10_B287D) for station B287 was conducted at 07:00 to a maximum depth of 1501 m. The MOCNESS was deployed at 09:00 for trawl 269 and fished to a maximum depth of 1500 following a standard pattern. The MOC-10 gear was recovered and on deck at 14:30. Net 0 fished from 0-1500

m, but due to gear issues nets 2-4 did not fish properly and net 5 opened at approximately 561 m to 0 m. Due to the MOC-10 gear complications the trawl 269 was classified as MEAT and no measurements or weights were recorded unless specimens were collected for a subsample. The MOCNESS was deployed at 22:30 (Trawl 270) to a maximum depth of 600 m. Nets 0-3 followed a tow-yo pattern (net 0: 0-100 m, net 1: 100-470 m, net 2: 470-500 m, net 3: 500-600 m) while nets 4 and 5 fished a standard depth range (net 4: 600-200 m, net 5: 200-0 m) to encompass sample area from trawl 269 that was classified as MEAT.

28 April 2025: The MOC-10 gear was recovered and on deck at 02:30. A daytime CTD cast (CTD_DP10_B287D2) for station B287 was deployed at 06:00 to a maximum depth of 801 m. A second daytime MOCNESS trawl (Trawl 271) for station B287 was deployed at 09:00. The MOC-10 gear was recovered and on deck at 14:30. There was a delayed opening of net 4 leading to depth ranges of nets 3-5 to differ from the standard fishing pattern and net 5 did not fire during the trawling process so there were no samples collected from net 5 (net 3: 800-200 m, net 4: 200-0). During processing, the ship transited to station B286 (**27°30.00'N, 87°30.00'W**) and arrived at 18:05. Trawl 272 at station B286 was deployed at 21:00 and fished the standard fishing pattern with a maximum depth of 1500.

29 April 2025: The MOC-10 gear was recovered and on deck at 02:30. The MOCNESS was deployed at station B286 for a daytime trawl at 09:00 (Trawl 273) to a maximum depth of 1500 m. The MOC-10 gear was recovered and on deck at 14:30 then the ship began transit to station B082 (**28°00'N, 88°00'W**). Ship arrived at station B082 at 19:33. A CTD cast was conducted at 19:00 but no data was collected. The MOCNESS was deployed for trawl 274 at 21:00 to a maximum depth of 1500 m.

30 April 2025: The MOC-10 gear was recovered and on deck at 02:30. Codends were emptied and processing began. The MOCNESS was deployed at 09:00 for trawl 275 and fished to a maximum depth of 1500 m. The MOC-10 gear was recovered and on deck at 14:30 and the ship began transiting to station B081 (**28°12.39'N, 87°59.80'W**). The ship arrived to station B081 at 1611. The MOCNESS was deployed at station B081 at 2100 for trawl 276 and fished to a maximum depth of 1500 m. Nets 2-5 fished standardized depth bins (net 0: 0-1500 m, net 1: 1500-1000 m, net 2:1000-800 m, net 3: 800-600 m, net 4: 600-200 m, net 5: 200-0 m) while nets 0 and 1 only fished to 1500 m.

01 May 2025: The MOC-10 was recovered and on deck at 02:30. Net 4 ripped during trawling and was replaced before the next deployment. One of the bars for net 5 lost nuts but was fixed prior to the next deployment. The MOCNESS was deployed for trawl 277 at 09:00 and fished to a maximum depth of 1500 m. The MOC-10 was recovered and on deck at 14:30 to begin processing, and the ship began transit to station B001 (**28°45.40'N, 87°59.9'W**). The ship arrived at station B001 at 16:38. The MOCNESS was deployed at 21:00 for trawl 278 and fished to a maximum depth of 1000 m.

02 May 2025: The MOC-10 gear was recovered and on deck at 01:00. The MOCNESS was deployed at 07:00 for trawl 279 and fished to a maximum depth of 1000 m. The MOC-10 was recovered and on deck at 11:00 to begin processing. Once MOC-10 gear was recovered, the ship began heading back to Gulfport at 11:00.

3 Operations and Protocols

3.1 Midwater Trawling

Midwater trawling was conducted using a 10-m² mouth area MOCNESS (MOC-10 hereafter) unit (Figure 3), leased from Continental Shelf Associates (Stuart, FL), rigged with six 3-mm mesh nets manufactured for DEEPEND by Sea-Gear Corporation (Melbourne, FL). Each net was fitted with a removable PVC codend (Figure 4), and numbered consecutively to correlate with depths sampled. Sampling was conducted to 1500 m, bottom depth allowing. The first net (Net 0) was fished from the surface to 1500 m, Net 1 from 1500 to 1200 m, Net 2 from 1200 to 1000 m, Net 3 from 1000 to 600 m, Net 4 from 600 to 200 m, and Net 5 from 200 m to the surface (Figure 4). This was the same depth scheme used during the NOAA NRDA Offshore Nekton Sampling and Analysis Program.

Each station was sampled at least twice, with one deployment centered at solar noon (1000 h -1600 h) and one centered at midnight (2200 h – 0400 h). The first three stations were sampled a total of four times with the first two samples following the standard depth scheme. The third and fourth sample for each station followed a tow-yo pattern (Figure 4; net 0: 0-100 M, net 1: 100-400 m, net 2: 400-500 m, net 3: 500-650 m, net 4: 650-650 m, net 5: 650-0 m) in attempt to target scattering layers and fished to a maximum depth of (1000 m). Net 4 was fished in an oblique pattern to reach the maximum depth of 1000 m and returned to the initial opening depth (650 m) before the deployment of net 5. The ship's speed was kept minimal, between 1 and 2.5 kn. Winch deployment and retrieval speeds (non-zero) ranged from 5-25 m min⁻¹, with 15 m min⁻¹ typical. The MOCNESS operator stayed in constant radio contact with the winch operator to keep the MOCNESS frame at an optimal angle (between 35-50°).



Figure 3. 10-m² MOCNESS unit being retrieved (left) and codends being retrieved (right) on the R/V Point Sur during DEEPEND cruise DP06. Photo: DEEPEND 2018/Danté Fenolio.

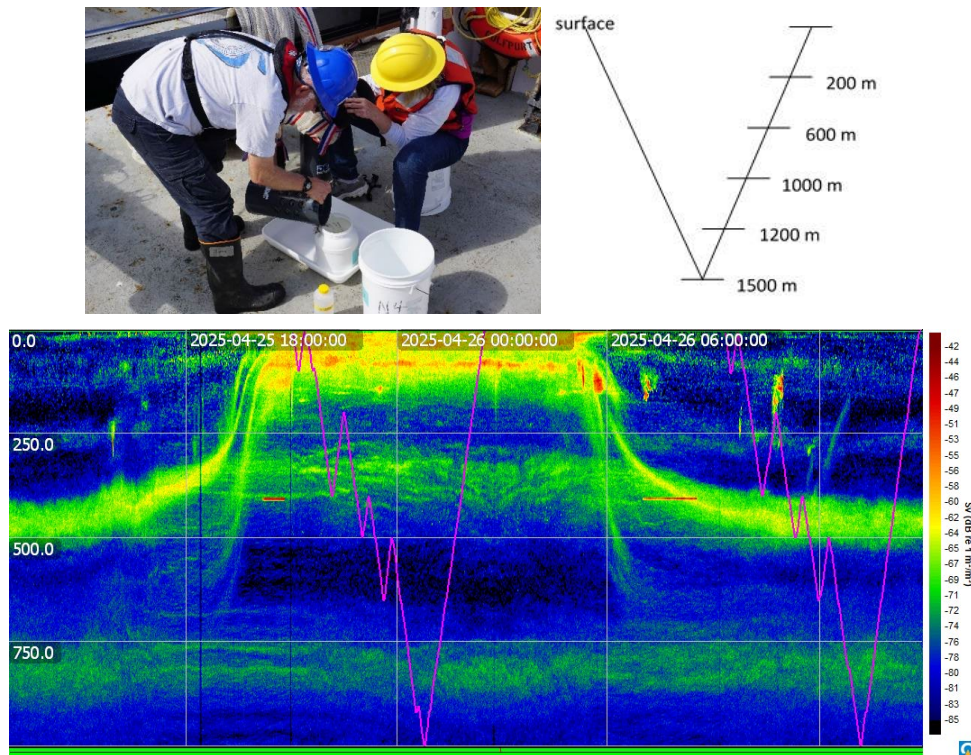


Figure 4. (left) MOC-10 codend being collected into a cold-water bucket, and (right) standard depth sampling scheme, (bottom) tow-yo sample scheme overlaid on a 24-hr 18kHz echogram from station B252.

3.2 Permitting

An E5 categorical exclusion from the National Environmental Policy Act was originally granted to this project on April 1, 2020, and an addendum issued on May 30, 2024. A Letter of Acknowledgement was received from NOAA Fisheries on April 8, 2025, acknowledging the proposed work and providing an exemption from the use of a turtle excluder device. The National Marine Fisheries Service Highly Migratory Species Management Division issued a Scientific Research Permit (HMS-SRP-25-19) allowing the collection of 70 unspecified tunas and 70 unspecified billfish species. All field protocols, fish handling and preservation, and removal of fish tissues were conducted in compliance with Nova Southeastern University IACUC protocol (Protocol #2020.01.TS3 DEEPEND RESTORE midwater trawling) for the study of vertebrates and adhered to the USA legal requirements.

3.3 Hydroacoustics

Multi-frequency acoustic data were collected continuously during all MOC-10 deployments, CTD casts, bio-optical profiler casts, and while in transit between stations via a pole-mounted transducer (when possible, Figure 5, 6). Mechanical and electrical noise associated with operating the MOC-10 reduced the effective range of each echosounder. The 18, 38, 70, and 120 kHz echosounders collected meaningful data to depths of approximately 1500 m. The echosounders were calibrated using tungsten and copper spheres at sea following standardized procedures (e.g., Foote et al. 1987).



Figure 5. Kevin Boswell calibrating an echosounder.

3.4 CTD Profiling

Eleven CTD profiles were conducted using the ship's CTD rosette (Figure 7) at three station locations (B175, B252, and B287). The maximum depth of deployment varied by station and solar cycle. The average maximum depth of deployment was 1500 m as the Wide Band Autonomous Transceiver (WBAT) is not rated to go beyond that depth threshold. The WBAT was attached to the CTD for some of the deployments which altered the typical speed of deployment and/or recovery. A full water column profile was done first in all CTD casts, then the WBAT was held at different depth strata within the deep scattering layer to investigate fine-scale organism scattering and capture the full migration. These casts typically lasted between 3 and 5 hours, operating a 38 and 120 kHz echosounder in wideband. A multibeam imaging sonar, the M3, was affixed to the CTD at the UTAH station to image the bathymetry and organisms within the deep scattering layer.

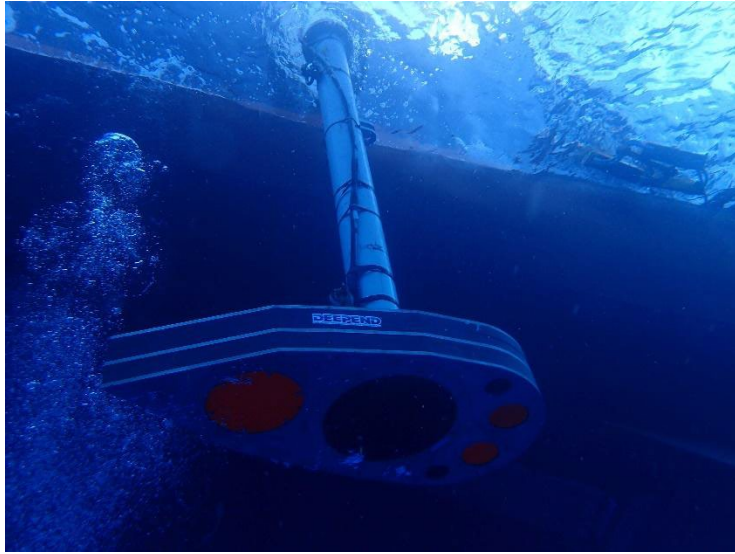


Figure 6. Hydroacoustics transducer in sensing mode (underwater) on the R/V Point Sur.

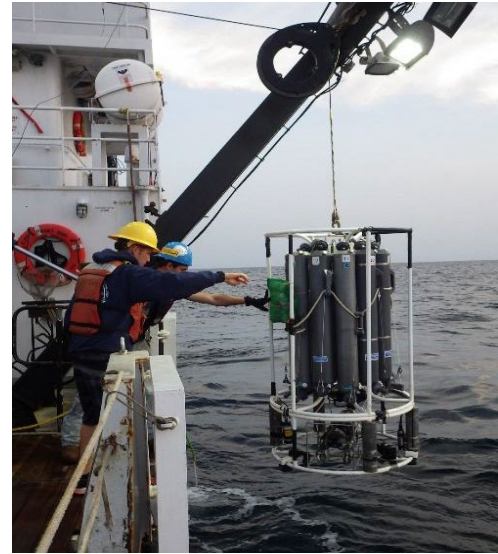


Figure 7. R/V Point Sur CTD rosette deployment.

3.5 Sampling on Station

Sampling and sensing operations on station were organized around daytime and nighttime MOC-10 trawling, with these centered on solar noon and midnight, respectively. Each deployment took approximately 6 h. MOC-10 sample processing occurred between MOC-10 deployments, as were CTD casts. Transit to the next station generally occurred during the morning interval after day and night MOC-10 deployments at each station. Acoustic profiling was conducted during all hours except during transits when the transducer boom was raised.

4 Sample Processing Protocol

4.1 Nekton, Micronekton, and Macroplankton Samples

Upon MOC-10 recovery, individual nets were washed down with seawater to ensure all collected organisms were concentrated in the codends. Codends were disconnected from the net one at a time, and the contents were poured/washed into 6-L wide-mouth containers filled with pre-chilled seawater. Each container was numbered to correspond with the net from which samples were collected.

These containers were taken inside the ship's lab and stored cold in a refrigeration unit pending processing. Only one sample was processed at a time to prevent cross-sample mixing. "Net 0" (0-1500 m oblique) samples were generally processed first except in cases where live animals suitable for imaging were collected, in which case these samples were processed first. Afterwards, samples were processed in numerical order, unless there was a large sample in "Net 5" in which the order of processing began with "Net 0", "Net 5", "Net 4" and then followed numerical order ending with "Net 1."

Processing involved the identification, enumeration, weighing (when possible) and measurement of all fish, macrocrustacean, and cephalopod specimens. Once a sample was completely subsampled, then the entire remaining sample was fixed in 10% buffered formalin (v/v formalin:seawater). A running tally was kept of specimens collected for all analyses. In the individual project reports that

follow, only data for those portions of samples that were taken for genetic or biochemical analyses are included. The remaining data will be presented after completing laboratory sample work-up. Tissues or whole samples were taken of each taxon according to a pre-determined protocol. Sample processing for genetic analyses was as follows:

- 1) fishes were preserved whole or the lateral muscle tissue was dissected from the specimens' right side and then stored in 80% non-denatured alcohol, RNALater and/or were frozen;
- 2) macrocrustacean whole specimens were stored in 80% non-denatured alcohol, RNALater, and/or were frozen;
- 3) pteropods and heteropods were stored whole in 70% ethanol; and
- 4) cephalopod tissue samples were stored in RNALater;

Fish specimens from which tissue was taken for genetic analysis (i.e., vouchers) were individually marked with a paired tag matching that of the tissue sample and fixed in formalin.

For polycyclic aromatic hydrocarbon (PAH) analyses, whole specimens and/or tissue samples were frozen at -80°C. Prior to PAH sample collection, reusable 20-ml VOA vials were washed with water and detergent, rinsed three times with deionized water then combusted in an oven at 450°C for 4-5 hours. Aluminum foil was combusted as well in an oven at 450°C for 4-5 hours and used to cover the inside of each VOA vial plastic cap. Samples were deposited in each vial and then frozen. Prior to lipid extraction (i.e. PAHs) samples will be freeze-dried. Lipid extraction of freeze-dried samples will be conducted under high temperature (100°C) and pressure (1500 psi) with a solvent mixture 9:1 v:v cyclohexane:dichloromethane using an Accelerated Solvent Extraction system (ASE 2001, Dionex) following modified EPA methods.

4.2 Water Column Structure at the Stations

Detailed hydrographic analyses are currently ongoing, but the predominant mesoscale oceanographic feature during DEEPEND cruise DP10 was a mesoscale cyclonic eddy (MCE) centered at 28° N, 88° W, approximately 60 n.m. wide (East-West) and 30 n.m. tall (North-South). The Loop Current extended to about 27° N, so was not sampled during this cruise, but the MCE was sampled intensively.

Graphs of hydrographic structure at depth via analysis of CTD sensor data for each station are presented in Figures 8 - 12. High surface salinities indicated very little influence of Mississippi or Apalachicola River input during this cruise.

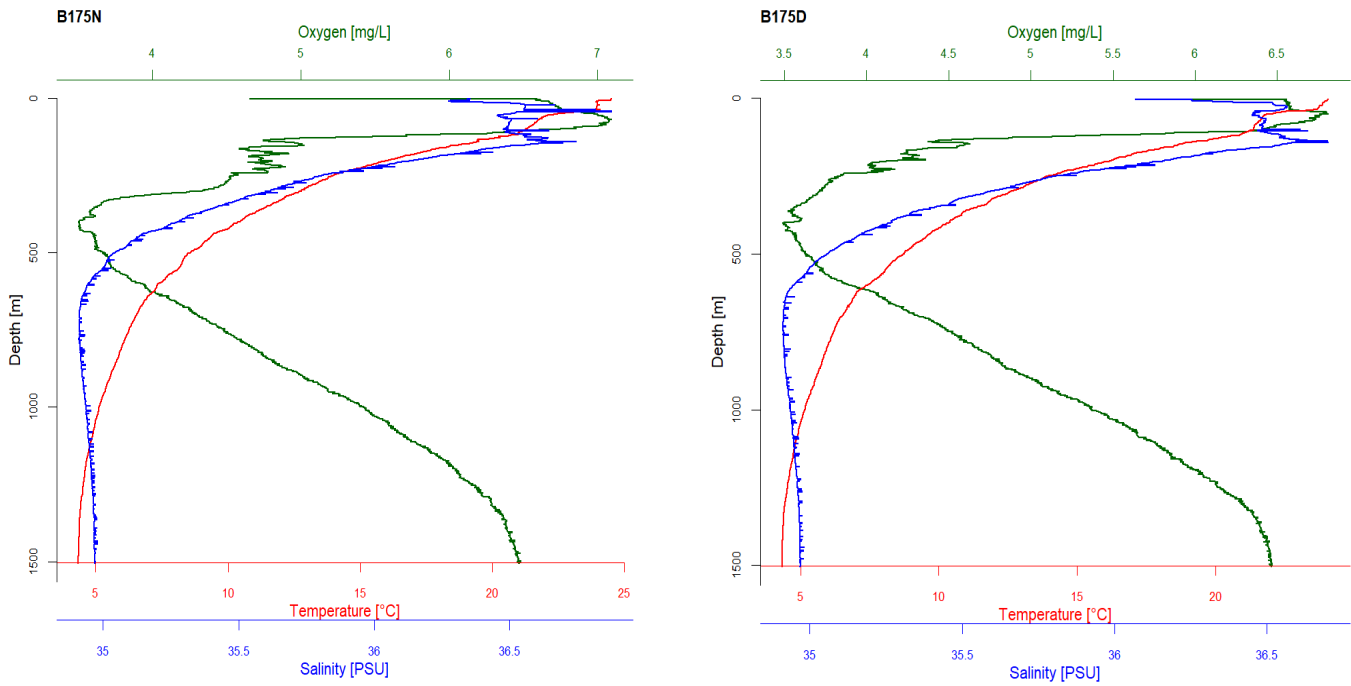


Figure 8. CTD temperature, salinity, and oxygen data from cast CTD_264 (left) at station B175N and CTD_265 (right) at station B175D.

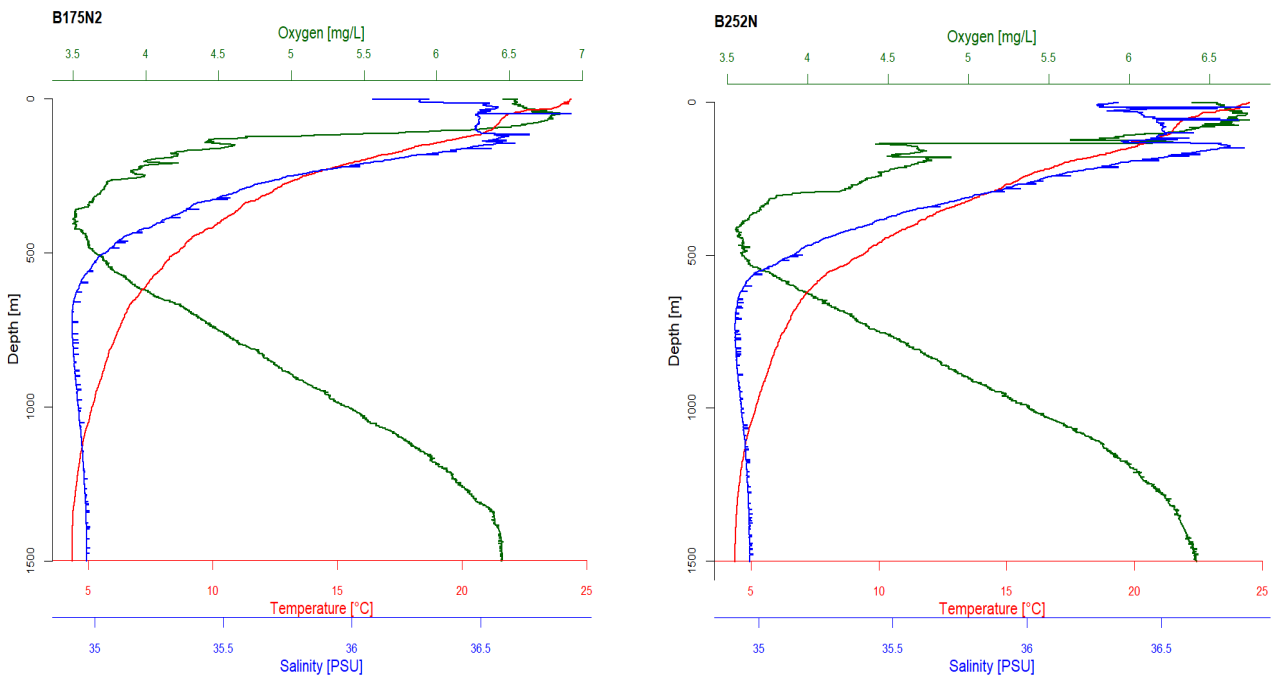


Figure 9. CTD temperature, salinity, and oxygen data from cast CTD_266 (left) at station B175N2 and CTD_267 (right) at station B252N.

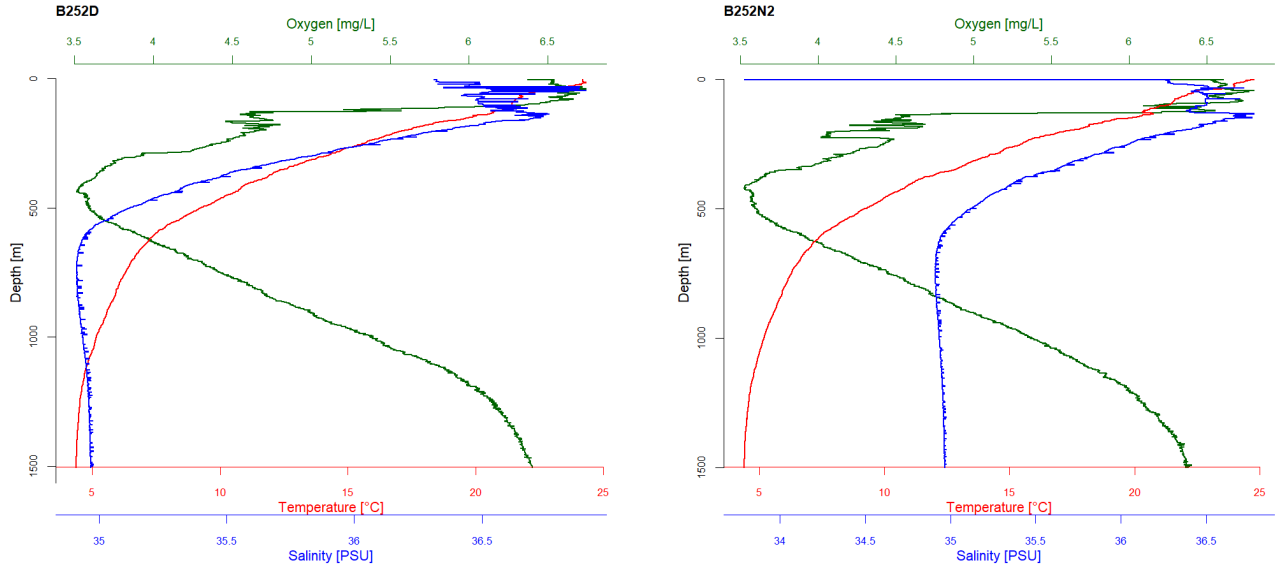


Figure 10. CTD temperature, salinity, and oxygen data from cast CTD_268 (left) at station B252D and CTD_269 (right) at station B252N2.

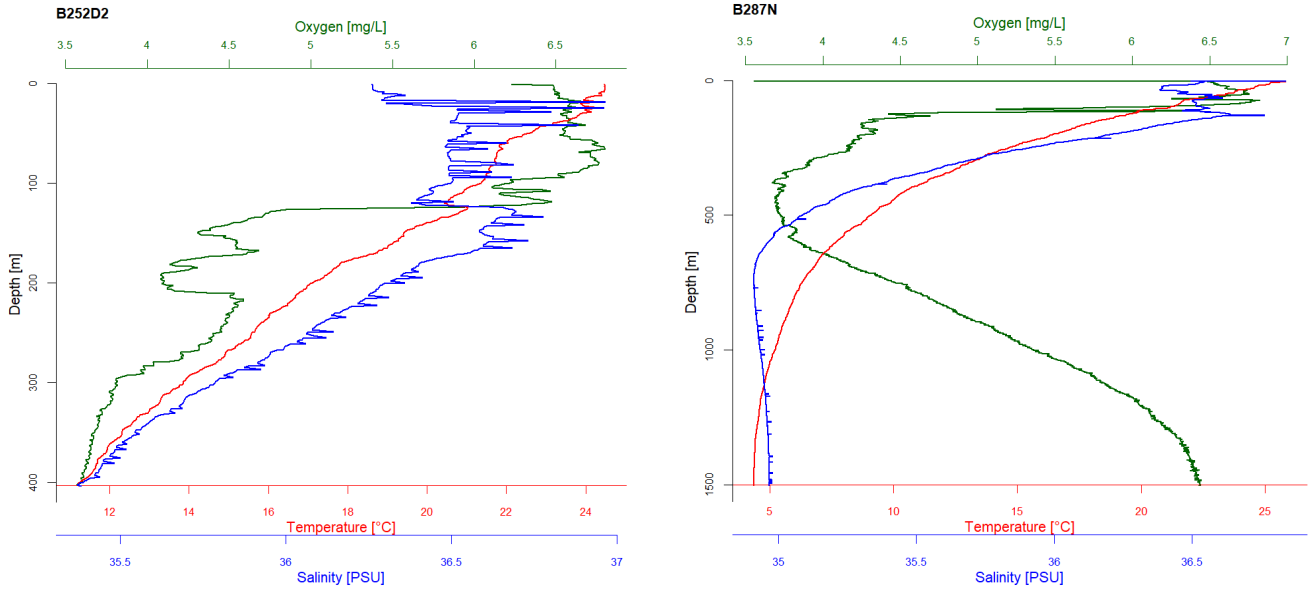


Figure 11. CTD temperature, salinity, and oxygen data from cast CTD_270 (left) at station B252D2 and CTD_271 (right) at station B287N.

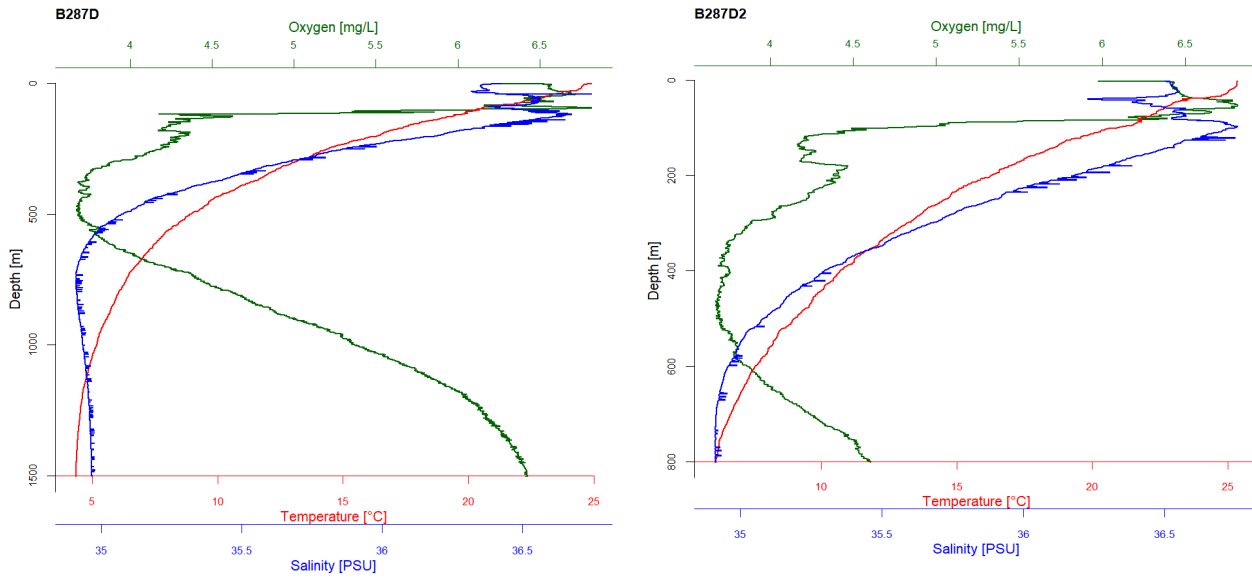


Figure 12. CTD temperature, salinity, and oxygen data from cast CTD_272 (left) at station B287D and CTD_273 (right) at station B287D2.

5 Individual Project Reports

5.1 MOCNESS Sampling

A total of 120 trawl samples were collected during 20 deployments (Table 1), a remarkable number indicating that every station that was planned on the cruise was sampled (i.e., no weather days or gear failures). MOC-10 trawl locations and trajectories were labeled by station number in Figure 13. Of these, 86 samples were considered ‘quantitative,’ having met the criteria of: 1) proper opening and closing at prescribed depths; 2) proper flowmeter (volume) readings; 3) proper net behavior (mouth angle, net speed) during deployment; and 4) no signs of mechanical failure (tears, holes). Of these 20 deployments, two were repeats of previous deployments in which mechanical problems occurred. All samples combined for a cumulative total of ~4.4 million cubic meters of water filtered with ~2.7 million cubic meters coming from quantitative samples. Sampling on this cruise differed from previous cruises, in that at three of the six stations sampled, we conducted “DSL deployments” in addition to standard deployments. In DSL deployments, the depth intervals sampled were dictated by the depths of deep-scattering layers registered from concurrent echosounding rather than the standardized DEPEND depth sample intervals. A total of four DSL deployments were conducted, with two occurring at station B252 and one deployment each at stations B175 and B287. Specimens for genetic and biochemical analyses (see 5.3-5.5) were taken from all trawls.

Table 1. MOC-10 trawl deployment times and locations during DP10. DSL tow-yo trawl deployments are shown in red.

TrawlNo	StationID	SampleDate	TowStart Time_CDT	StartLat	StartLon	TowEnd Time_CDT	EndLat	EndLon
260	B175	22Apr25	21:12	29.0146	-87.493	21:12	28.8785	-87.5542
261	B175	23Apr25	09:15	29.038	-87.491	09:15	28.9333	-87.55
262	B175	23Apr25	21:30	29.0418	-87.498	21:30	28.9023	-87.5474
263	B175	24Apr25	10:25	29.0085	-87.4919	10:25	28.875	-87.4348
264	B252	24Apr25	21:03	28.5123	-87.5153	21:03	28.4323	-87.3817
265	B252	25Apr25	09:05	28.4815	-87.5146	09:05	28.4668	-87.4576
266	B252	25Apr25	21:02	28.5243	-87.5148	21:02	28.4976	-87.5012
267	B252	26Apr25	09:19	28.5054	-87.5036	09:19	28.4965	-87.4764
268	B287	26Apr25	21:03	28.0146	-87.5451	21:03	27.9704	-87.5161
269	B287	27Apr25	09:04	27.9889	-87.5382	09:04	28.0051	-87.4723
270	B287	27Apr25	22:22	28.0521	-87.5615	22:22	28.0379	-87.5393
271	B287	28Apr25	09:02	28.0069	-87.5445	09:02	27.992	-87.453
272	B286	28Apr25	21:04	27.5148	-87.5503	21:04	27.4844	-87.5011
273	B286	29Apr25	09:02	27.5	-87.5381	09:02	27.4545	-87.4101
274	B082	29Apr25	21:01	28.0037	-88.0116	21:01	27.8776	-87.9353
275	B082	30Apr25	09:03	27.9982	-88.0213	09:03	27.9483	-87.94
276	B081	30Apr25	21:20	28.5098	-88.0302	21:20	28.4909	-87.9535
277	B081	01May25	09:05	28.5134	-88.0011	09:05	28.4367	-87.8761
278	B001	01May25	20:58	29.0158	-88.0086	20:58	28.9358	-87.9144
279	B001	02May25	07:01	29.004	-87.9887	07:01	28.9699	-88.018

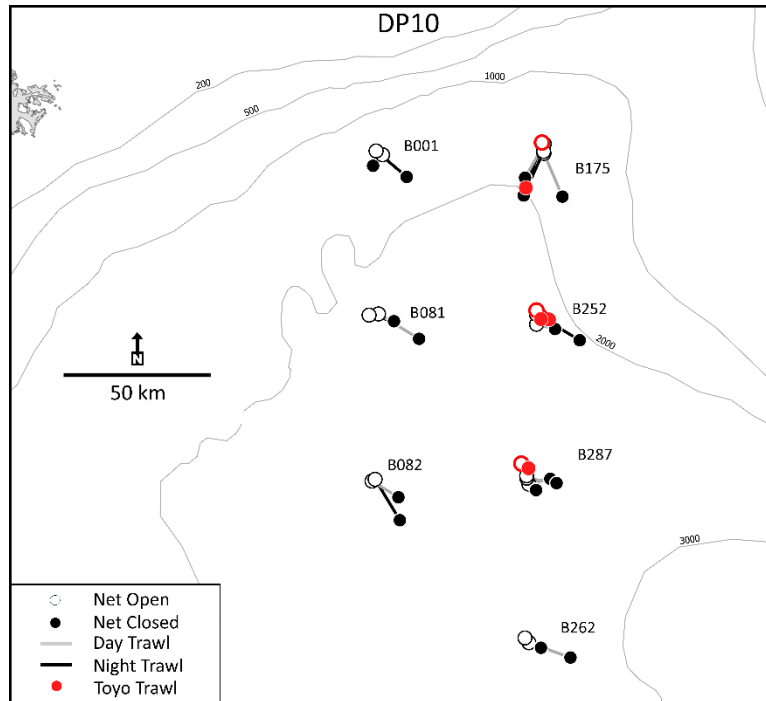


Figure 13. DEEPEND cruise DP10 MOC-10 trawl locations and trajectories, labeled by station number. Day samples are indicated by the light line, while night samples have black lines. DSL tow-yo deployments are shown in red. Net positions are shown by either an open circle (net open) or a filled circle (net closed).

5.2 Faunal Accounts

5.2.1 Crustacea.

Over 11,073 crustaceans were collected, of which ~4,565 were nektonic taxa (decapods, amphipods, and lophogastrids). Crustaceans were sorted and curated according to end use (EtOH, formalin, or frozen). Analysis is currently ongoing, with ~3,000 individuals identified to species level and preserved with: 80% EtOH for studies of population connectivity and/or barcoding; RNAlater for transcriptomics; frozen for genome sequencing; or, preserved in glycerol and PFA for morphology and histology analyses. Additionally, 754 of these individuals were identified to species-level and frozen for PAH analysis.

The remaining ~3,508 crustaceans were identified to the family Euphausiidae and stored in 10% formalin for species identification back in the shoreside laboratory. All copepods, amphipods and isopoda were collected and stored in formalin for outside investigators. Numerous individuals were also photographed either by Danté Fenolio at sea for whole animal images, or Tammy Frank in lab under a microscope for images of morphological distinctions to aid with future taxonomy.

5.2.2 Mollusca.

A total of 120 individual cephalopods were collected with 13 species representing seven families. A total of 1,110 pteropods (4 spp.) and 13 heteropods (3 spp.) were collected and preserved in 95%

ethanol for species identification and future genetic work at Dr. Judkins' laboratory at the University of South Florida St. Petersburg. Additionally, all squid/octopods were frozen at -80 for H. Judkins gut metabarcoding project.

5.2.3 Fishes.

A total of 11,587 fish specimens were collected from a minimum of 172 species representing 86 families. Analysis is currently ongoing.

5.3 Genetic/Genomic Analyses

5.3.1 Genetic Diversity and Connectivity Crustaceans and Fish.

A total of 948 and 738 individuals of crustaceans and fish were collected for all the objectives listed below. All animals were preserved in EtOH, RNAlater, glycerol or frozen in liquid nitrogen. The primary aim of the genetic diversity and connectivity objective was to collect crustacean (Table 2) and fish (Table 3) indicator species for downstream population genomic analyses. The list of targeted species is below for both groups. The target was to collect 20+ individuals per species, which was met for most species.

Table 2. Crustacean specimens collected during DP10 for population genetics.

Species	N
<i>Acanthephyra acutifrons</i>	1
<i>Acanthephyra brevirostris</i>	1
<i>Acanthephyra purpurea</i>	9
<i>Acanthephyra stylostratis</i>	33
<i>Allosergestes amphitratus</i>	31
<i>Allosergestes pectinatus</i>	58
<i>Allosergestes sargassi</i>	50
<i>Bentheogennema intermedia</i>	4
<i>Bentheuphausia amblyops</i>	22
<i>Challengerosergia talismani</i>	5
<i>Challengerosergia hansjacobi</i>	15
<i>Challengerosergia talismani</i>	1
<i>Cornutosergestes cornutus</i>	17
<i>Deosergestes corniculum</i>	38
<i>Deosergestes henseni</i>	21
<i>Deosergestes paraseminudus</i>	26
<i>Ephryna benedicti</i>	1
<i>Ephryna ombango</i>	6
<i>Eucopeia grimaldii</i>	6
<i>Eucopeia sculpticauda</i>	1

<i>Eupasiphae gilessi</i>	2
<i>Eusergestes atlanticus</i>	53
<i>Funchalia villosa</i>	9
<i>Gardinerosergia splendens</i>	79
<i>Gnauthophausia zoea</i>	10
<i>Hemipenaeus carpenter</i>	2
<i>Hymenodora glacialis</i>	2
<i>Hymenodora gracilis</i>	14
<i>Hymenopenaeus debilis</i>	3
<i>Janicella spinicauda</i>	35
<i>Lucaya bigelowi</i>	17
<i>Menigodora miccyla</i>	2
<i>Meningodora vesca</i>	15
<i>Meningodora compsa</i>	1
<i>Meningorda mollis</i>	1
<i>Mesopenaeus tropicalis</i>	1
<i>Neognathophausia ingens</i>	11
<i>Neosergestes edwardsii</i>	11
<i>Notostomus elegans</i>	5
<i>Notostomus gibbosus</i>	5
<i>Oplophorus gracilirostris</i>	8
<i>Parapasiphae cristata</i>	2
<i>Parapasiphae sulcatifrons</i>	8
<i>Parasergestes armatus</i>	24
<i>Parasergestes vigilax</i>	33
<i>Pasiphaea merriami</i>	5
<i>Petalidium obesum</i>	1
<i>Phorcosergia grandis</i>	20
<i>Phronima Sedentaria</i>	8
<i>Physetocaris microphthalma</i>	2
<i>Plesionika richardii</i>	16
<i>Robustosergia regalis</i>	21
<i>Robustosergia robusta</i>	30

<i>Sergia tenuiremis</i>	59
<i>Systellaspis cristata</i>	4
<i>Systellaspis debilis</i>	25
<i>Systellaspis pellucida</i>	9

Table 3. Fish specimens collected during DP10 for population genetics.

Species	N
<i>Argyropelecus aculeatus</i>	9
<i>Argyropelecus gigas</i>	2
<i>Astronesthes micropogon</i>	2
<i>Bathophilus brevis</i>	1
<i>Bolinichthys photothorax</i>	42
<i>Ceratospelus warmingii</i>	24
<i>Cestoma regani</i>	1
<i>Chauliodus sloani</i>	14
<i>Cyclothone acclinidens</i>	11
<i>Cyclothone alba</i>	9
<i>Cyclothone braueri</i>	14
<i>Cyclothone obscura</i>	4
<i>Cyclothone pallida</i>	7
<i>Cyclothone pseudopallida</i>	24
<i>Diaphus bertelseni</i>	4
<i>Diaphus dumerilii</i>	10
<i>Diaphus lucidus</i>	6
<i>Diaphus mollis</i>	2
<i>Diaphus problematicus</i>	1
<i>Diaphus splendidus</i>	6
<i>Diplophos taenia</i>	1
<i>Dolicholagus longirostris</i>	3
<i>Echiostoma barbatum</i>	1
<i>Eustomias bigelowi</i>	1
<i>Evermannella melanodoesma</i>	1
<i>Gigantactis gracilicauda</i>	1

<i>Hygophum macrochir</i>	6
<i>Hygophum taaningi</i>	10
<i>Lampanyctus alatus</i>	2
<i>Lampanyctus curprarius</i>	2
<i>Lampanyctus lineatus</i>	5
<i>Lampadena luminosa</i>	2
<i>Lepidophanes guentheri</i>	14
<i>Lobianchia dofleini</i>	1
<i>Lobianchia gemellarii</i>	7
<i>Maulisia maui</i>	1
<i>Maurolicus weitzmani</i>	1
<i>Microstoma microstoma</i>	1
<i>Myctophum affine</i>	2
<i>Notolychnus valdiviae</i>	18
<i>Notoscopelus caudispinosus</i>	1
<i>Notoscopelus resplendens</i>	22
<i>Omosudis lowii</i>	2
<i>Photostomias guernei</i>	9
<i>Pollichthys maui</i>	18
<i>Polyipnus laternatus</i>	7
<i>Scopeloberyx rubriventer</i>	1
<i>Scopelosaurus maui</i>	1
<i>Sigmops elongatus</i>	5
<i>Sternoptyx diaphana</i>	24
<i>Sternoptyx pseudobscura</i>	9
<i>Stomias affinis</i>	2
<i>Taaningichthys bathyphilus</i>	3
<i>Valenciennellus tripunctulatus</i>	21
<i>Vinciguerrria nimbaria</i>	8
<i>Vinciguerrria poweriae</i>	3

5.3.2 Deep-sea Crustaceans and Fish Barcodes.

A secondary objective was to catalog crustacean and fish species diversity and add them to the DNA barcoding study within the Gulf. Several crustaceans and fish were collected for continued efforts to barcode all species collected from this project (Table 4). All individuals will be curated into the

Florida International Crustacean Collection or Florida International Fish Collection at FIU that currently has >13,000 vouchered crustacean specimens and >400 vouchered crustacean taxa. This included entering all individuals and the associated metadata into an electronic database (FileMaker Pro). Some of these individuals will be DNA barcoded for the 16S and COI gene to be included in future publications.

Table 4. Crustacean and fish taxa collected for barcoding studies during DEEPEND cruise DP10.

Species	N
<i>Acanthephyra purpurea</i>	1
<i>Acanthephyra stylostratis</i>	6
<i>Allosergestes pectinatus</i>	175
<i>Allosergestes sargassi</i>	17
<i>Deosergestes corniculum</i>	17
<i>Gardineroseggia splendens</i>	79
<i>Oplophorus gracilirostris</i>	8
<i>Plesionika richardi</i>	14
<i>Sergestes atlanticus</i>	40
<i>Systellaspis debilis</i>	6
<i>Argyropelecus aculeatus</i>	16
<i>Argyropelecus hemigymnus</i>	9
<i>Benthoosema suborbitale</i>	46
<i>Ceratoscopelus warmingii</i>	4
<i>Diaphus mollis</i>	3
<i>Lampanyctus lineatus</i>	5
<i>Photostomias guernei</i>	10
<i>Sigmops elongatus</i>	3
<i>Sternoptyx diaphana</i>	23
<i>Sternoptyx pseudobscura</i>	16
<i>Valenciennellus tripunctulatus</i>	5

5.3.3 Fish Transcriptomics and Genomes.

A total of 200 specimens were collected for various genomic studies (Table 5 & 6). Representatives of several species were collected for projects related to functional genetics (in search of genes related to adaptation to deep-sea environment). Specimens were curated in liquid nitrogen or in RNAlater for full genome sequencing and transcriptomes in the future. The following list includes the crustaceans (Table 5) and fishes (Table 6) of interest for these projects. At least 3-10 individuals of each species were collected as part of this initiative.

Table 5. Crustaceans collected for genome sequencing studies during DP10.

Species	N
<i>Acanthephyra acutifrons</i>	1
<i>Acanthephyra curtirostris</i>	16
<i>Acanthephyra pelagica</i>	11
<i>Challengerosergia hansjacobi</i>	6
<i>Gennadas</i> spp.	60
<i>Menigodora vesca</i>	1
<i>Mesopenaeus tropicalis</i>	7
<i>Notostomus elegans</i>	1
<i>Notostomus gibbosus</i>	5
<i>Plesionika richardii</i>	8
Solenoceridae	1

Table 6. Fish taxa collected for transcriptomics and genomic studies during DP10.

Species	N
<i>Anoplogaster cornuta</i>	1
<i>Argyropelecus aculeatus</i>	1
<i>Argyropelecus hemigymnus</i>	2
<i>Ceratoscopelus warmingii</i>	3
<i>Chauliodus sloani</i>	5
<i>Cyclothone pallida</i>	18
<i>Diaphus dumerilii</i>	7
<i>Diaphus mollis</i>	2
<i>Lepidophanes guentheri</i>	8
<i>Sigmops elongatus</i>	15
<i>Sternopytx diaphana</i>	7
<i>Sternopytx pseudobscura</i>	14

5.4 Polycyclic Aromatic Hydrocarbon Analysis

5.4.1 Crustaceans.

A total of 754 specimens from at least 10 species (Table 7) were frozen whole for immediate or future PAH analysis.

Table 7. Crustacean specimens collected for PAH analysis on DEEPEND cruise DP10.

Species	N
<i>Acanthephyra</i> sp.	1
<i>Acanthephyra acutifrons</i>	9
<i>Acanthephyra purpurea</i>	29
<i>Acanthephyra stylostratis</i>	39
<i>Deosergestes henseni</i>	5
<i>Nematoscelis atlantica/microps</i>	391
<i>Oplophorus gracilirostris</i>	3
<i>Parasergestes vigilax</i>	72
<i>Systellaspis debilis</i>	61
<i>Thysanopoda obtusifrons/aequalis</i>	144

5.4.2 Fishes.

A total of 486 organ/tissue samples were collected from 20 species for immediate or future PAH analysis (Table 8). Large fish specimens were dissected at sea and organs/tissues kept separate (guts, liver, muscle, skin, ovaries). Other fish specimens were frozen as whole bodies.

Table 8. Fish specimens collected for PAH analysis on DEEPEND cruise DP10.

Species	N
<i>Anoplogaster cornuta</i>	2
<i>Argyrolepecus aculeatus</i>	13
<i>Argyrolepecus hemigymnus</i>	19
<i>Ariomma bondi</i>	9
<i>Ceratoscopelus warmingii</i>	8
<i>Chauliodus sloani</i>	18
<i>Cyclothone obscura</i>	91
<i>Cyclothone pallida</i>	173
<i>Decapterus tabl</i>	3
<i>Diaphus dumerilii</i>	11
<i>Diaphus mollis</i>	13
<i>Eustomias schmidti</i>	1
<i>Gigantura chuni</i>	1
<i>Lampanyctus alatus</i>	21
<i>Lepidophanes guentheri</i>	17
<i>Maurolicus weitzmani</i>	14
<i>Scopelogadus mizolepis</i>	1
<i>Sigmops elongatus</i>	37

<i>Sternoptyx diaphana</i>	14
<i>Sternoptyx pseudobscura</i>	20

5.4.3 Gelatinous Zooplankton.

A total of 99 gelatinous zooplankton from five species were collected for immediate or future PAH analysis (Table 9). Specimens were frozen whole.

Table 9. Gelatinous zooplankton specimens collected for PAH analysis on DEEPEND cruise DP10.

Species	N
<i>Atolla</i> sp.	8
Cnidaria	4
<i>Periphylla periphylla</i>	22
<i>Pyrosoma</i> sp.	4
<i>Pyrosoma atlanticum</i>	61

5.5 Sea Bird and Marine Mammal Observations

During the DP10 cruise, seabird and marine mammal observations were notated opportunistically by Dr. Jon Moore and Dr. Heather Judkins. Photographs were taken when possible (Figure 14). Sightings of seabirds included barn swallows, cliff swallows, cattle egrets, royal terns, sandwich terns, pomarine jaegers, laughing gulls, palm warblers, brown pelicans, European collared dove, and shearwaters. The only marine mammals sighted were a pod of pantropical spotted dolphins. A detailed report can be found in Appendix A.

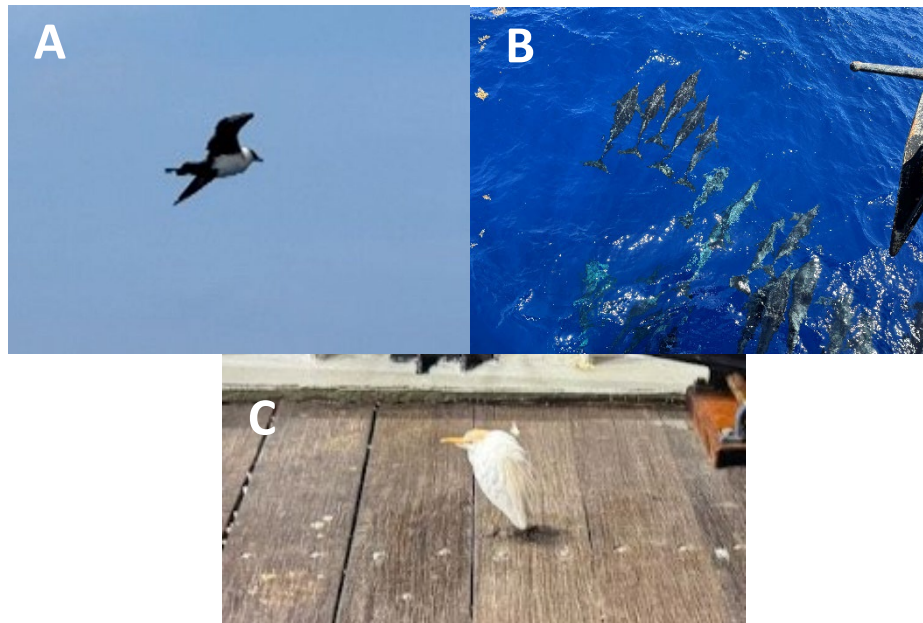


Figure 14. Seabirds and dolphins encountered while at sea: A. pomarine jaeger, B. pantropical spotted dolphins, C. cattle egret.

5.6 Hydroacoustic Data

Over 175 GB of acoustic backscatter data were collected during the DP10 cruise. Two Simrad EK-series splitbeam echosounders (18 and 38 kHz) collected data covering 1500 m (18 kHz and 38 kHz) of the water column (Figure 6). Both narrowband and wideband (at 18 and 38 kHz) data were collected opportunistically to examine the potential to use frequency spectra to further describe the scattering responses of mesopelagic fauna. Data were collected during day and nighttime MOC10 tows at 7 stations (B001, B081, B082, B175, B252, B286, B287 (Figure 15). For transiting between stations, the transducer pole had to be turned off and taken out of the water. Passive acoustic surveys were conducted in both continuous wave and wideband form during daytime and nighttime operations to characterize the noise (electrical interference) generated by the ship and associated machinery. Additionally, both echosounders were calibrated using standard tungsten carbide and copper spheres in both narrowband and wideband (18 and 38 kHz) modes following standardized procedures. All acoustic data from this cruise have been subsequently analyzed. The data packaging process is complete with the DP10 data submitted to NECI.

In addition to the ship mounted echosounders, over 20 GB of data was collected from the Wide Band Autonomous Transceiver (WBAT). Two EK-series splitbeam echosounders (120 kHz) operating in wideband were mounted to the CTD rosette in both downward and horizontal configurations. The purpose of deploying these echosounders was to gather scattering data on individual organisms within the deep scattering layer. CTD deployments were limited to a max depth of 1500 m with the WBAT.

Currently, the preliminary analyses of DP10 supports findings from the previous DEEPEND cruises that there is a substantial amount of material transported vertically during migration phases, and large differences among taxonomic groups have been identified. The paper published by D'Elia et al. (2016) has set forth the process to examine the scattering layers at relevant taxonomic resolution and quantify changes in movement patterns and distribution at these scales. The Marine Ecology and Acoustics Lab currently has two PhD students, Haley Glasmann and Ian Areford, aiming to further investigate the fine scale partitioning of the different scattering groups within the deep-water layers.

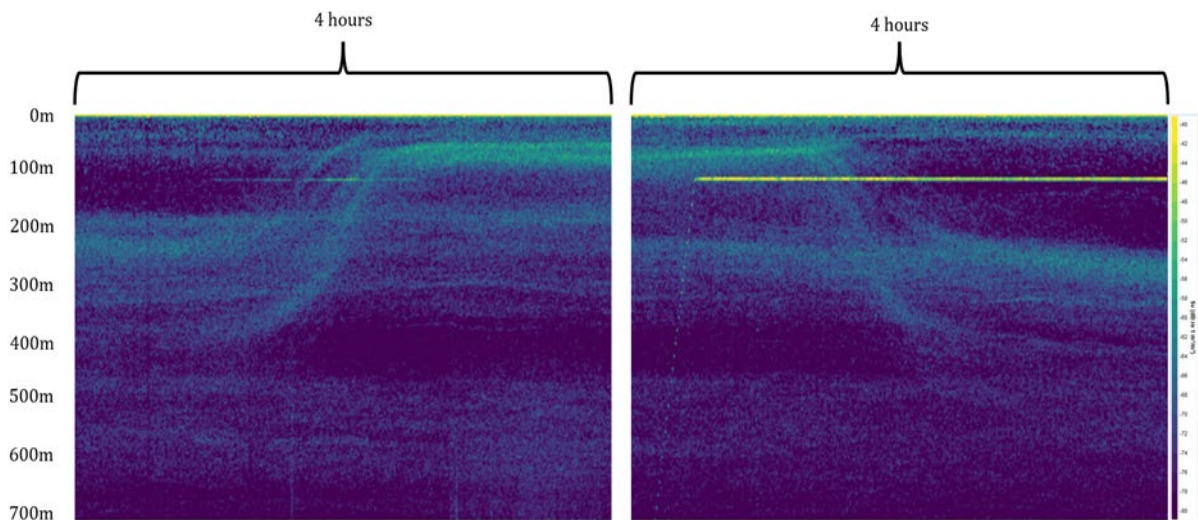


Figure 15. Examples of 18-kHz echograms collected at the B287 station, showing the full extent of the vertical migration. The left echogram shows the upward night migration, and the right echogram shows the downward morning migration.

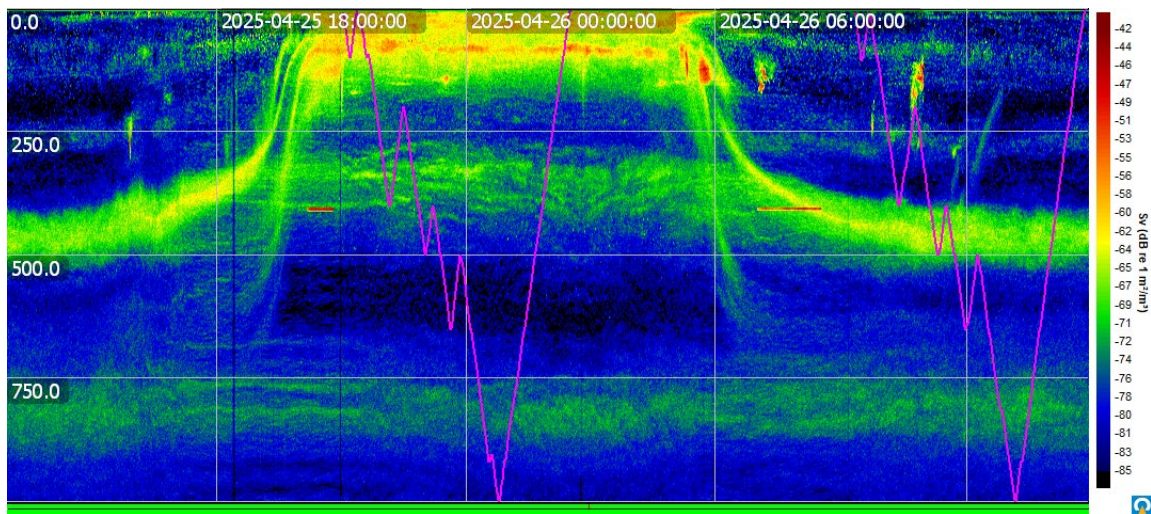


Figure 16. Example of an 18-kHz echogram collected at the B252 station representing a "tow-yo" MOC tow (purple line) during both day and night. Echogram represents a 24-hr time period.

5.7 Physical Oceanographic Data Collected

In situ physical oceanographic data from the CTD (Conductivity-Temperature-Density) rosette casts and the MOCNESS were collected during DP10.

5.7.1 CTD and Water Samples

The CTD and water sampling rosette was deployed 10 times at three stations during the DEEPEND DP10 cruise (Table 10). Water samples from several sample depths were collected using Niskin bottles on the CTD rosette at most stations, and duplicate samples were collected at select stations. The water samples were processed after the cruise at the UF Department of Physiological Sciences for contaminant analysis.

Table 10. CTD rosette deployments during DEEPEND cruise DP10.

Station	CTD cast ID	Cast Date	Cast Time (CDT)	Solar Cycle	Lat.	Lon.	Bottom depth (m)
B175	CTD_DP10_B175N	22-APR-25	1937	Night	29.009	-87.498	1739
B175	CTD_DP10_B175D	23-APR-25	0701	Day	29.019	-87.495	1681
B175	CTD_DP10_B175N2	23-APR-25	1907	Night	29.035	-87.500	1661
B252	CTD_DP10_B252N	24-APR-25	1900	Night	29.503	-87.502	2560
B252	CTD_DP10_B252D	25-APR-25	0704	Day	28.502	-87.501	2500
B252	CTD_DP10_B252N2	25-APR-25	1922	Night	28.523	-87.513	2500
B252	CTD_DP10_B252D2	26-APR-25	0651	Day	28.499	-87.505	2500
B287	CTD_DP10_B287N	26-APR-25	1837	Night	28.011	-87.527	2500
B287	CTD_DP10_B287D	27-APR-25	0701	Day	27.992	-87.521	2500
B287	CTD_DP10_B287D2	28-APR-25	0557	Day	28.002	-87.518	2200

6 6. Outreach Activities

6.1 Dr. Danté Fenolio/DEEPEND Photography

Dr. Danté Fenolio, lead of DEEPEND's imaging project, took over 3,500 photos during this cruise. He used new techniques such as white box photography to capture the true colors of the darkest deep-sea fishes. He also used alternative lighting such as ultraviolet and red lights to illuminate photophore patterns.

6.2 DEEPEND Website

During the cruise, nine blogs were published on the DEEPEND website along with images of animals, equipment, and the DEEPEND team members. Several posts highlighted the work of DEEPEND graduate students from several different universities who are working towards their MS or PhD degrees. Other blogs gave a glimpse of life at sea and the difficulties faced by researchers in the field. Several graduate students also documented their time on the cruise through their own individual Instagram pages.

Appendix A. Seabird and marine mammal observations

22 Apr 2025

9:40-11:30 AM CDT

N29° 28.927', W88° 05.546' and steaming at 5.3 kn (SOG) at heading 139.5°

Green water, mostly cloudy, 76°F

3 Barn Swallows

1 Cliff Swallow

4 Cattle Egrets

3+ Royal Terns

7+ Laughing Gulls

23 Apr 2025

2:32 PM CDT

N28° 56.147', W88° 05.546'

Blue water, completely overcast, 77°F

1 Pomarine Jaeger

24 Apr 2025

7:14 AM CDT

N29° 13.103', W87° 46.758'

Blue water, mostly cloudy, 78°F

6 Barn Swallows

4 Cattle Egrets

26 Apr 2025

2:46 PM CDT

N28° 27.556', W87° 20.550'

Blue water, mostly sunny, 77°F

1 Bobolink male perched on chain at stern of ship

27 Apr 2025

2:33 PM CDT

N27° 59.338', W87° 32.297'

Blue water, sunny, 78°F

<6 Barn Swallows

1 Cattle Egret

28 Apr 2025

4:08 AM CDT

N27° 03.126', W87° 33.695'

Blue water, dark, 76°F

100+ Barn Swallows on all ship rigging, rails, ladders, and flying around boat

Few Cliff Swallows also seen

4 Cattle Egrets flying around boat

11:50 AM – 12:03PM CDT

N28° 00.414', W87° 32.675'

Blue water, almost cloudless, 78°F

1 Merlin (prairie population form) perched on deck crane
1 Cape May Warbler male at bow
1 White-winged Dove at bow
2 Cattle Egrets on back deck

2:31-2:38 PM
N27° 59.587', W87° 23.604'
Blue water, almost cloudless, 78°F
1 Palm Warbler hopping around machinery on 01 deck

30 Apr 2025
1:08 PM CDT
1 nm NW of N27° 57.166', W87° 56.555'
Blue water, sunny, 78°F
1 pod of Spotted pantropical dolphins (~30 dolphins seen, but crew said more were around earlier)
1 Black-Capped Petrel that was sitting on the water was disturbed by dolphins & flew off

2:15 PM CDT
N27° 57.166', W87° 56.555'
Blue water, sunny, 78°F
1 Brown Pelican adult sitting on water near stern as we were hauling in nets

4:03 PM CDT
N28° 11.043', W87° 58.226'
1 Cattle Egret on deck

1 May 2025
5:14-5:24 AM CDT
N28° 27.907', W87° 52.533'
Blue water, mostly cloudy, 76°F
~8 Spotted Pantropical Dolphins chasing flyingfishes in the lights off the back deck
3 Barn Swallows flying around the stern of the ship

1:32 PM CDT
N28° 26.737', W87° 53.410'
Blue water, mostly cloudy, 76°F
1 European Collared Dove on back deck
1 Cattle Egret on back deck

4:48 PM CDT
N28° 46.923', W87° 56.913'
Blue water, mostly cloudy, 76°F
2 Sandwich Terns flying by ship

7:25 PM CDT
N29° 00.243', W88° 00.182'
Blue water, mostly cloudy, 77°F
Originally saw 2 Bridled Terns sitting on water surface next to a sargassum line, those two took off and joined others to form flock of ~15 Bridled Terns which flew westward towards the setting sun

2 May 2025

9:50-10:03 AM CDT

N28° 56.405', W88° 02.643'

Blue water, mostly cloudy, 77°F

~20 Royal Terns hitting small fishes along a sargassum wind row

Also mixed in with Royal Terns:

1 Black Tern

2 Laughing Gull juvs

2+ Common Terns

1 or 2 Audubon's Shearwater landing on water and taking brief dips underwater