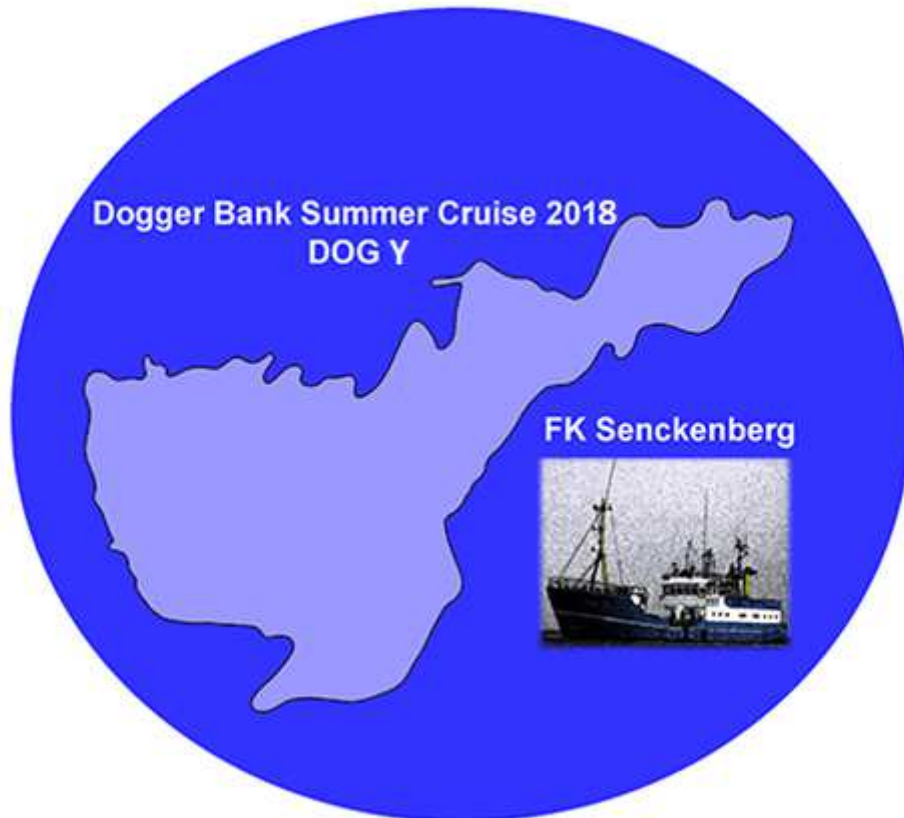


SENCKENBERG

Report on the 2018 Dogger Bank cruise with FK Senckenberg

10.08. – 15. 08. 2018



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Senckenberg Research Institute and Natural History Museum

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1. Aims and setting

The interannual variability of the epibenthic fauna of the Dogger Bank is a long term project of the Senckenberg Research Institute since 1991. This project aims at gathering basic data which is used for understanding presumed environmental changes. Therefore the study refers to 37 stations (see map in Annex) that are, whenever possible, sampled on a yearly basis in the same season with the same gear. The fauna is recorded quantitatively from each sample in order to allow studies on relative abundance. Additionally, temperature and current parameters are recorded to correlate with faunal composition and species abundances.

The present cruise forms the 25th of the series and gets the suffix DOG-Y. All former cruises were labelled after the alphabet with one letter starting with DOG-A in 1992. The first in 1991 was called DOG without any suffix.

This cruise was conducted by the Department for Marine Zoology at the Senckenberg Institute in Frankfurt am Main.

2. Narrative

The cruise started on Friday, 2018-08-10. On 08:40 CEST (UTC+1), the vessel left the shipyard and headed towards the main working area, the Doggerbank.

Station 14 (see station map) at british waters was reached on Saturday, August 11, 2018 at 18:30 CEST. Due to bad weather conditions, working started with some delay on Sunday, August 12, 2018, 07:00 CEST. At this and the following stations, the following technique was used: First, a CTD probe was used to measure the bottom temperature and salinity. Then, a standardized endobenthic sampling with the Ring Dredge was performed. Subsequently, one sample with a 2 m beam-trawl was taken, towed for 2 kn of speed on a length of one nautical mile (for more information see methods, chapter 3). These procedures took place on stations 03, 07, 12, 13, 15-18, 20, 22, 29, 31, 35 and 38 (see station map, chapter 4). Due to bad weather conditions, many delays in our working procedure took place and we were not able to perform all stations as planned. After station 38, ship time was over and the cruise could not be continued. Thus, sampling at the Dogger Bank was finished on August 15, 2018 at 16:28 CEST. FK Senckenberg headed back to Wilhelmshaven. The vessel was moored at Wilhelmshaven port on August 16, 2018 at 17:20 CEST.

The exact sequence of stations sampled can be seen at the station list (annex 1).

3. Methods:

For the measurement of the temperature and salinity of the water column, a CTD probe was lowered to the seafloor, recording while being hauled again.

Standard endobenthic sampling was performed with the Ring Dredge, being towed over the ground for approximately three minutes per station. The samples were recorded qualitatively on board ship, only few material was preserved for later analysis.

Epibenthos was collected with a 2m beam trawl with a tickler chain and a chain in the bottom rope. The minimum mesh size in the cod-end was 1 cm², so that animals above that size were collected quantitatively. The trawl was towed for 1 nautical mile at a speed of 2 knots. The sample was secured quantitatively (as far as possible) and washed through a set of sieves with 1 cm maximum and 1 mm minimum mesh size, respectively. The 1 cm-fraction was identified and counted on board the vessel, organisms not readily identifiable were pre-

served and taken back to the home laboratory. The smaller fractions were also preserved and taken back for qualitative analysis.

4. Station map

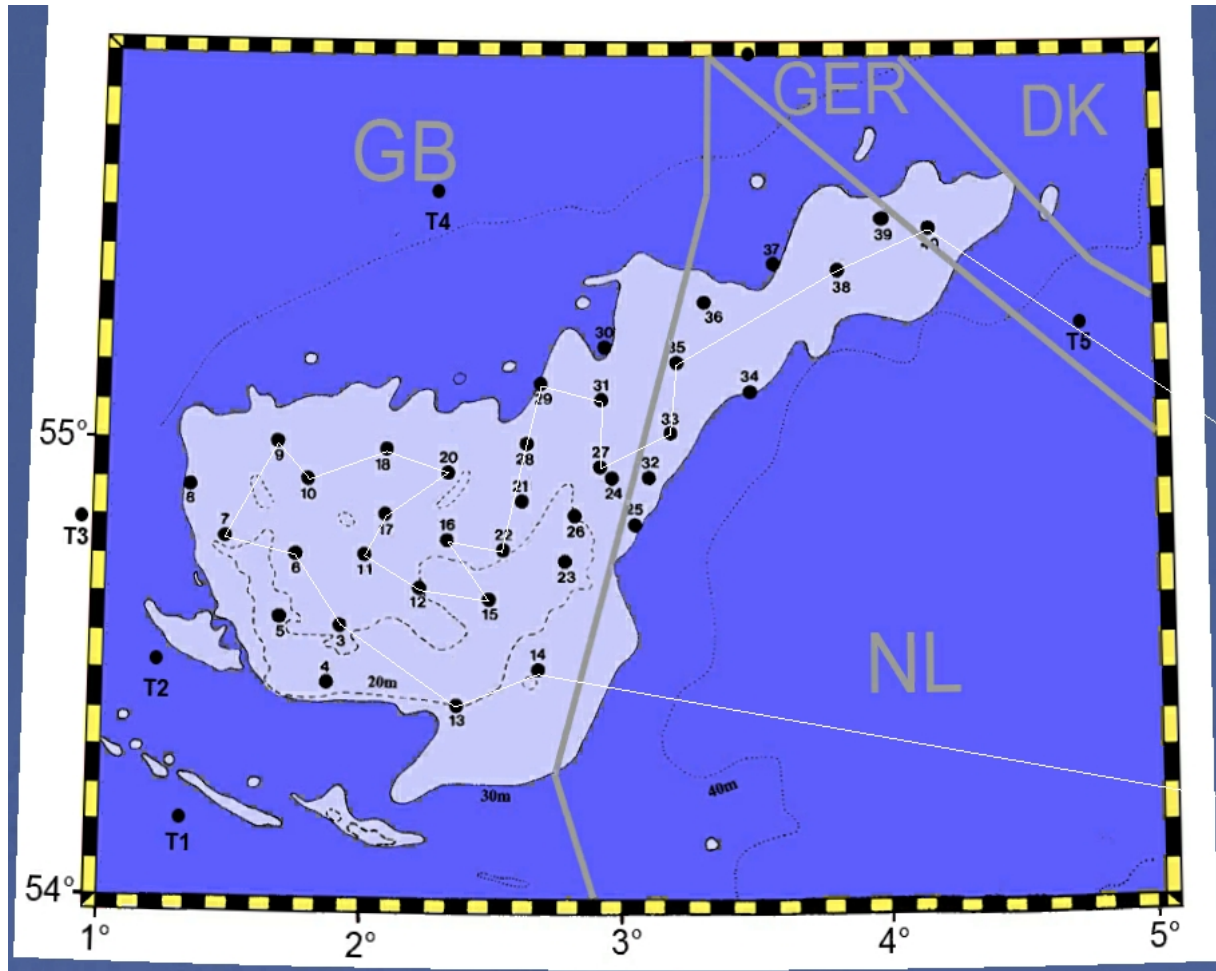


Fig. 1 Station map. Black dots: stations. White line: ship course.

**Annex 1: Stations of Dogger Bank Summer Cruise, August 2018 (DOGY)
with R.V. SENCKENBERG. All times UTC+1.**

Abbreviations:

Bt = 2 m beam trawl

Rd = ring dredge

CTD = CTD probe

| Date | Station | Device | Time | Event | Lat | Long | Depth [m] |
|------------|---------|--------|-------|------------|-------------|------------|-----------|
| 12.08.2018 | 14 | CTD | 07:20 | on ground | 54°30,930 N | 2°40,399 E | 25,0 m |
| 12.08.2018 | 14 | Rd | 07:31 | on ground | 54°30,984 N | 2°40,447 E | 25,0 m |
| 12.08.2018 | 14 | Rd | 07:34 | off ground | 54°30,918 N | 2°40,397 E | 25,0 m |
| 12.08.2018 | 14 | Bt | 08:00 | on ground | 54°31,115 N | 2°40,664 E | 25,0 m |
| 12.08.2018 | 14 | Bt | 08:33 | off ground | 54°30,221 N | 2°39,922 E | 25,0 m |
| 12.08.2018 | 13 | CTD | 17:17 | on ground | 54°27,066 N | 2°15,855 E | 18,0 m |
| 12.08.2018 | 13 | Rd | 17:26 | on ground | 54°27,090 N | 2°15,839 E | 18,0 m |
| 12.08.2018 | 13 | Rd | 17:30 | off ground | 54°27,027 N | 2°15,739 E | 18,0 m |
| 12.08.2018 | 13 | Bt | 17:47 | on ground | 54°27,213 N | 2°15,914 E | 18,0 m |
| 12.08.2018 | 13 | Bt | 18:20 | off ground | 54°26,230 N | 2°16,269 E | 18,0 m |
| 13.08.2018 | 3 | CTD | 07:05 | on ground | 54°36,374 N | 1°54,574 E | 25,0 m |
| 13.08.2018 | 3 | Rd | 07:14 | on ground | 54°36,331 N | 1°54,590 E | 25,0 m |
| 13.08.2018 | 3 | Rd | 07:17 | off ground | 54°36,347 N | 1°54,553 E | 25,0 m |
| 13.08.2018 | 3 | Bt | 07:54 | on ground | 54°36,153 N | 1°54,736 E | 25,0 m |
| 13.08.2018 | 3 | Bt | 08:26 | off ground | 54°37,064 N | 1°55,015 E | 25,0 m |
| 13.08.2018 | 7 | CTD | 10:50 | on ground | 54°47,912 N | 1°26,398 E | 27,0 m |
| 13.08.2018 | 7 | Rd | 10:59 | on ground | 54°47,929 N | 1°26,419 E | 27,0 m |
| 13.08.2018 | 7 | Rd | 11:02 | off ground | 54°47,950 N | 1°26,510 E | 27,0 m |
| 13.08.2018 | 7 | Bt | 11:30 | on ground | 54°47,929 N | 1°26,339 E | 27,0 m |
| 13.08.2018 | 7 | Bt | 12:01 | off ground | 54°48,364 N | 1°27,997 E | 27,0 m |
| 13.08.2018 | 18 | CTD | 15:00 | on ground | 54°59,372 N | 2°05,609 E | 28,0 m |
| 13.08.2018 | 18 | Rd | 15:08 | on ground | 54°59,388 N | 2°05,504 E | 28,0 m |
| 13.08.2018 | 18 | Rd | 15:11 | off ground | 54°59,478 N | 2°05,408 E | 28,0 m |
| 13.08.2018 | 18 | Bt | 15:31 | on ground | 54°59,057 N | 2°05,618 E | 28,0 m |
| 13.08.2018 | 18 | Bt | 16:00 | off ground | 54°59,966 N | 2°05,189 E | 28,0 m |
| 13.08.2018 | 20 | CTD | 17:24 | on ground | 54°56,107 N | 2°19,704 E | 28,0 m |
| 13.08.2018 | 20 | Rd | 17:32 | on ground | 54°56,121 N | 2°19,807 E | 28,0 m |
| 13.08.2018 | 20 | Rd | 17:37 | off ground | 54°56,245 N | 2°19,751 E | 28,0 m |
| 13.08.2018 | 20 | Bt | 17:53 | on ground | 54°55,815 N | 2°19,858 E | 28,0 m |
| 13.08.2018 | 20 | Bt | 18:23 | off ground | 54°56,003 N | 2°19,744 E | 28,0 m |
| 14.08.2018 | 17 | CTD | 07:00 | on ground | 54°50,913 N | 2°04,989 E | 25,0 m |
| 14.08.2018 | 17 | Rd | 07:10 | on ground | 54°50,898 N | 2°05,017 E | 25,0 m |
| 14.08.2018 | 17 | Rd | 07:13 | off ground | 54°50,983 N | 2°04,982 E | 25,0 m |
| 14.08.2018 | 17 | Bt | 07:29 | on ground | 54°50,897 N | 2°04,893 E | 25,0 m |
| 14.08.2018 | 17 | Bt | 07:54 | off ground | 54°49,892 N | 2°04,839 E | 25,0 m |
| 14.08.2018 | 12 | CTD | 09:14 | on ground | 54°41,726 N | 2°12,254 E | 27,0 m |

| Date | Station | Device | Time | Event | Lat | Long | Depth [m] |
|------------|---------|--------|-------|------------|-------------|------------|-----------|
| 14.08.2018 | 12 | Rd | 09:25 | on ground | 54°41,741 N | 2°12,241 E | 27,0 m |
| 14.08.2018 | 12 | Rd | 09:29 | off ground | 54°41,623 N | 2°12,303 E | 27,0 m |
| 14.08.2018 | 12 | Bt | 09:52 | on ground | 54°41,942 N | 2°12,132 E | 27,0 m |
| 14.08.2018 | 12 | Bt | 10:08 | off ground | 54°41,437 N | 2°12,549 E | 27,0 m |
| 14.08.2018 | 15 | CTD | 11:23 | on ground | 54°39,867 N | 2°28,957 E | 22,0 m |
| 14.08.2018 | 15 | Rd | 11:31 | on ground | 54°39,861 N | 2°28,993 E | 22,0 m |
| 14.08.2018 | 15 | Rd | 11:34 | off ground | 54°39,802 N | 2°29,012 E | 22,0 m |
| 14.08.2018 | 15 | Bt | 11:48 | on ground | 54°40,077 N | 2°28,790 E | 22,0 m |
| 14.08.2018 | 15 | Bt | 12:22 | off ground | 54°39,102 N | 2°29,318 E | 22,0 m |
| 14.08.2018 | 16 | CTD | 15:01 | on ground | 54°47,382 N | 2°18,675 E | 22,0 m |
| 14.08.2018 | 16 | Rd | 13:54 | on ground | 54°47,666 N | 2°19,396 E | 22,0 m |
| 14.08.2018 | 16 | Rd | 13:58 | off ground | 54°47,587 N | 2°19,284 E | 22,0 m |
| 14.08.2018 | 16 | Bt | 14:19 | on ground | 54°48,068 N | 2°20,205 E | 22,0 m |
| 14.08.2018 | 16 | Bt | 14:48 | off ground | 54°47,447 N | 2°18,888 E | 22,0 m |
| 14.08.2018 | 22 | CTD | 16:07 | on ground | 54°46,309 N | 2°32,404 E | 23,0 m |
| 14.08.2018 | 22 | Rd | 16:16 | on ground | 54°46,405 N | 2°32,614 E | 23,0 m |
| 14.08.2018 | 22 | Rd | 16:23 | off ground | 54°46,178 N | 2°32,486 E | 23,0 m |
| 14.08.2018 | 22 | Bt | 16:48 | on ground | 54°46,627 N | 2°32,890 E | 23,0 m |
| 14.08.2018 | 22 | Bt | 17:13 | off ground | 54°46,597 N | 2°31,426 E | 23,0 m |
| 15.08.2018 | 29 | CTD | 07:33 | on ground | 55°07,889 N | 2°40,458 E | 29,0 m |
| 15.08.2018 | 29 | Rd | 07:11 | on ground | 55°07,889 N | 2°40,471 E | 29,0 m |
| 15.08.2018 | 29 | Rd | 07:15 | off ground | 55°07,831 N | 2°40,650 E | 29,0 m |
| 15.08.2018 | 29 | Bt | 07:47 | on ground | 55°07,966 N | 2°40,407 E | 29,0 m |
| 15.08.2018 | 29 | Bt | 08:12 | off ground | 55°06,989 N | 2°40,876 E | 29,0 m |
| 15.08.2018 | 31 | CTD | 09:15 | on ground | 55°05,657 N | 2°53,491 E | 28,0 m |
| 15.08.2018 | 31 | Rd | 09:23 | on ground | 55°05,669 N | 2°53,554 E | 28,0 m |
| 15.08.2018 | 31 | Rd | 09:26 | off ground | 55°05,609 N | 2°53,450 E | 28,0 m |
| 15.08.2018 | 31 | Bt | 09:43 | on ground | 55°05,777 N | 2°53,633 E | 28,0 m |
| 15.08.2018 | 31 | Bt | 10:00 | off ground | 55°05,166 N | 2°53,347 E | 28,0 m |
| 15.08.2018 | 35 | CTD | 11:43 | on ground | 55°10,332 N | 3°12,212 E | 30,0 m |
| 15.08.2018 | 35 | Rd | 11:52 | on ground | 55°10,374 N | 3°12,288 E | 30,0 m |
| 15.08.2018 | 35 | Rd | 11:55 | off ground | 55°10,244 N | 3°12,192 E | 30,0 m |
| 15.08.2018 | 35 | Bt | 12:07 | on ground | 55°10,548 N | 3°12,183 E | 30,0 m |
| 15.08.2018 | 35 | Bt | 12:39 | off ground | 55°09,765 N | 3°13,417 E | 30,0 m |
| 15.08.2018 | 38 | CTD | 15:22 | on ground | 55°22,714 N | 3°47,093 E | 30,0 m |
| 15.08.2018 | 38 | Rd | 15:33 | on ground | 55°22,791 N | 3°47,150 E | 30,0 m |
| 15.08.2018 | 38 | Rd | 15:37 | off ground | 55°22,693 N | 3°47,309 E | 30,0 m |
| 15.08.2018 | 38 | Bt | 15:55 | on ground | 55°22,901 N | 3°46,854 E | 30,0 m |
| 15.08.2018 | 38 | Bt | 16:28 | off ground | 55°21,899 N | 3°47,841 E | 30,0 m |