

Cruise Report
FRV „Walther Herwig III“ Cruise WH363
01.03.2013-12.03.2013

**Test of fishing/plankton gears and
calibration of scientific echosounder**

Scientist in charge: Dr. Daniel Stepputtis

In a nutshell

The main focus of this cruise was the test of the performance of several nets (Fish and Plankton) and the calibration of the scientific echosounder.

During the cruise, three dives were investigated using underwater-observation using a remotely operated towed vehicle (ROTV):

- bottom trawl (140') with stimulation ropes inside the extension piece
- multisampler attached to a pelagic trawl (Sargasso-Eel-Trawl)
- Isaacs-Kidd-Midwater Trawl (IKMT, Plankton Trawl)

These tests were conducted on the way from Bremerhaven to Bergen.

Additionally, the 4 frequencies of the scientific echosounder (SIMRAD EK60) were calibrated successfully in a fjord near Bergen (Norway).

Narrative and results

FRV „Walter Herwig III“ was equipped with fishing gears, plankton gear, remotely operated towed vehicle (ROTV „JULI“) and all hydroacoustic equipment on March 1st. In the morning of March 2nd, the vessel left Bremerhaven. The overall cruise track can be seen in **Figure 1**).

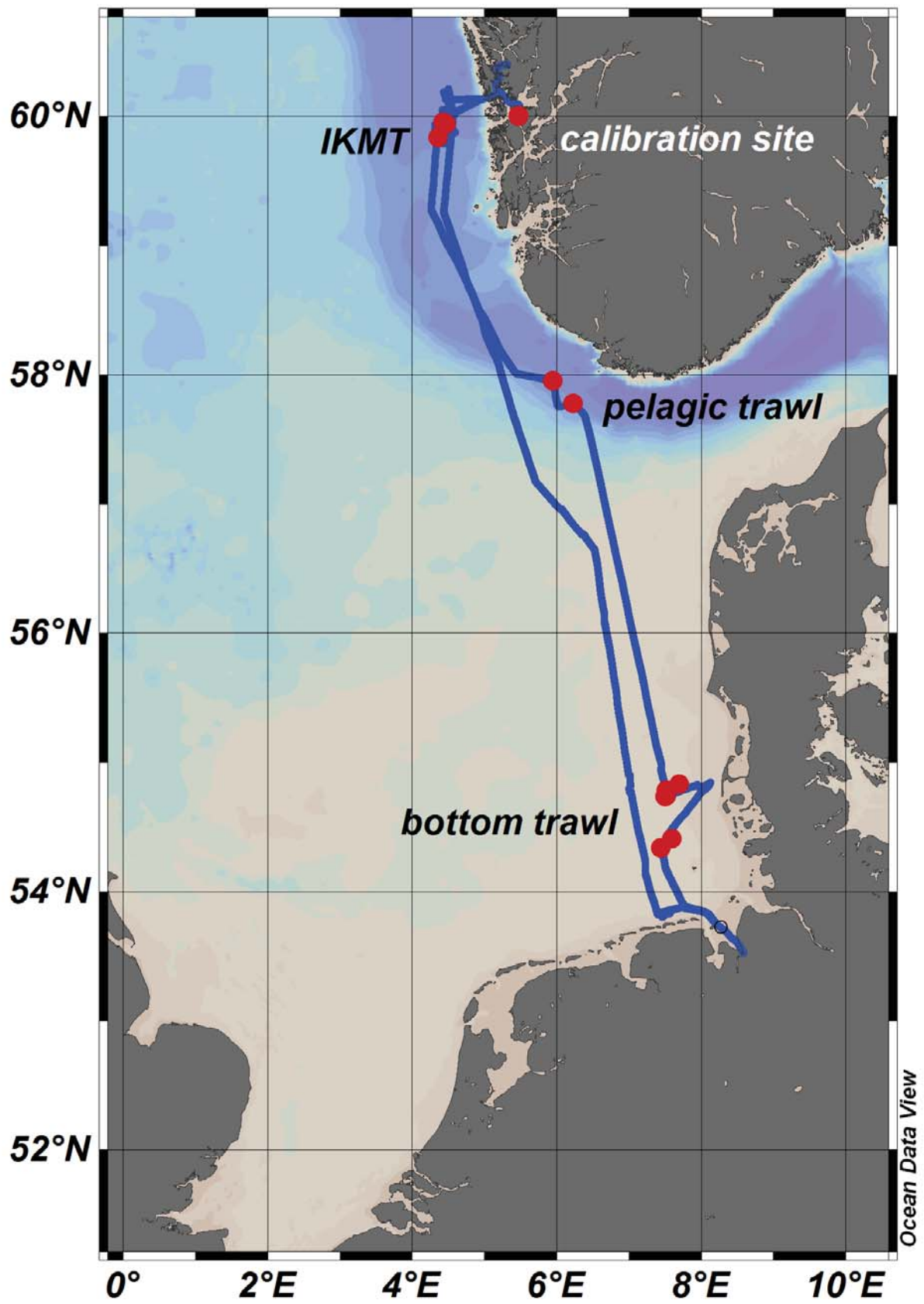


Figure 1: FRV „Walther Herwig III“ Cruise WH363: cruise track.

a) test of codends in Bottom Trawl

The underwater observation of different codend modifications of the bottom trawl was conducted at March 2nd (NW of Helgoland) and March 3rd (W of Sylt). The ROUV equipped with cameras was used to “fly” around the gear and additional self-recording cameras were mounted inside the trawl.

The main focus was to obtain underwater recordings of stimulation ropes, used to improve the escapement behavior of cod. Based on these recordings (e.g. **Figure 2**), the configuration was adopted.



Figure 2: Screenshot from underwater recordings of codend with stimulation ropes

b) test of multisampler

The multisampler-device will be used on future hydroacoustic surveys in the Irminger Sea. To ensure a proper functionality, this device was tested during this cruise. The ROUV equipped with cameras was used to “fly” around the gear and additional self-recording cameras were mounted inside the trawl.

The investigations were conducted in the Norwegian Trench, south of Norway at March 4th (see **Figure 1**).

The multisampler device was working as expected and sufficient underwater-recordings were obtained (**Figure 3**).

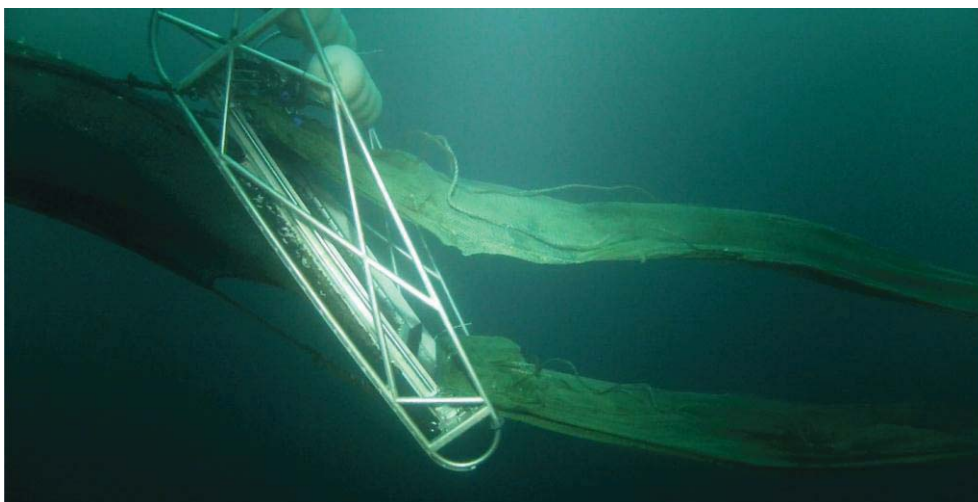


Figure 3: Screenshot from underwater recordings (ROUV-view) of the multisampler attached to the pelagic Sargasso-Eel-Trawl

c) test of IKMT-plankton net

The Isaacs-Kidd-Midwater Trawl (IKMT, Plankton Trawl) is the ichthyoplankton sampling device used for the Sargasso Sea-Eel-Survey (WH342 in 2011 and WH373 in 2014). Based on the experience in 2011, a new codend was designed for this gear. The investigation during this cruise aimed to test the underwater performance of this new codend and of the gear itself.

The investigations were conducted at March 5th, west of Bergen (Norway) (see **Figure 1**).

The ROTV equipped with cameras was used to “fly” around the gear (**Figure 4**) and additional self-recording cameras were mounted inside the trawl.

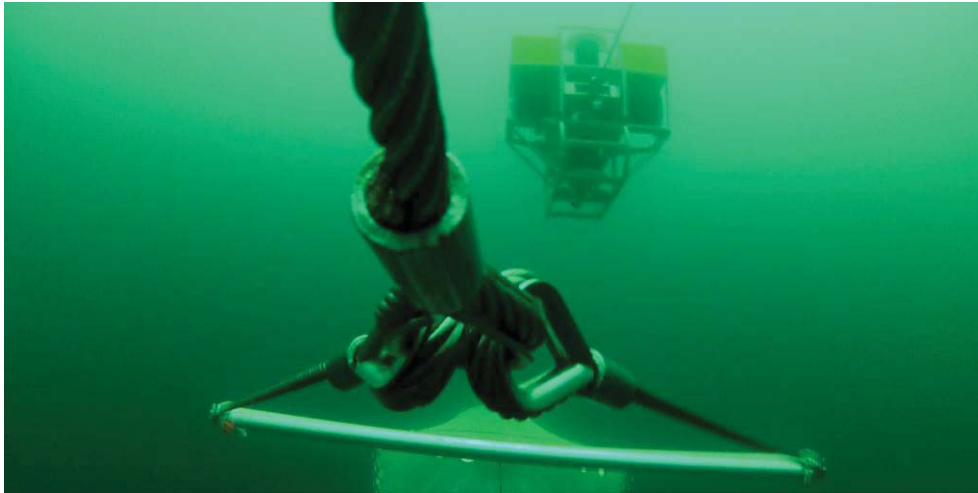


Figure 4: ROTV JULI „flying“ around the IKMT (IKMT view; IKMT in foreground)

Two main codend configurations of the IKMT were tested:

1. Configuration, as used during WH342 in 2011 (**Figure 5**)
2. Configuration with new codend design, which consists of a POM-ring and a separate codend bag to improve handling of the catch (**Figure 6**)

As seen for both configurations, the general design of the IKMT needs to be reviewed to ensure

- optimal mouth opening of the IKMT
- optimal shape of the net to ensure good flow performance inside the trawl and optimal filtering performance
- sufficient performance of the flowmeter

Apart from these general comments, it was shown that the new codend design performed as expected (**Figure 6**)

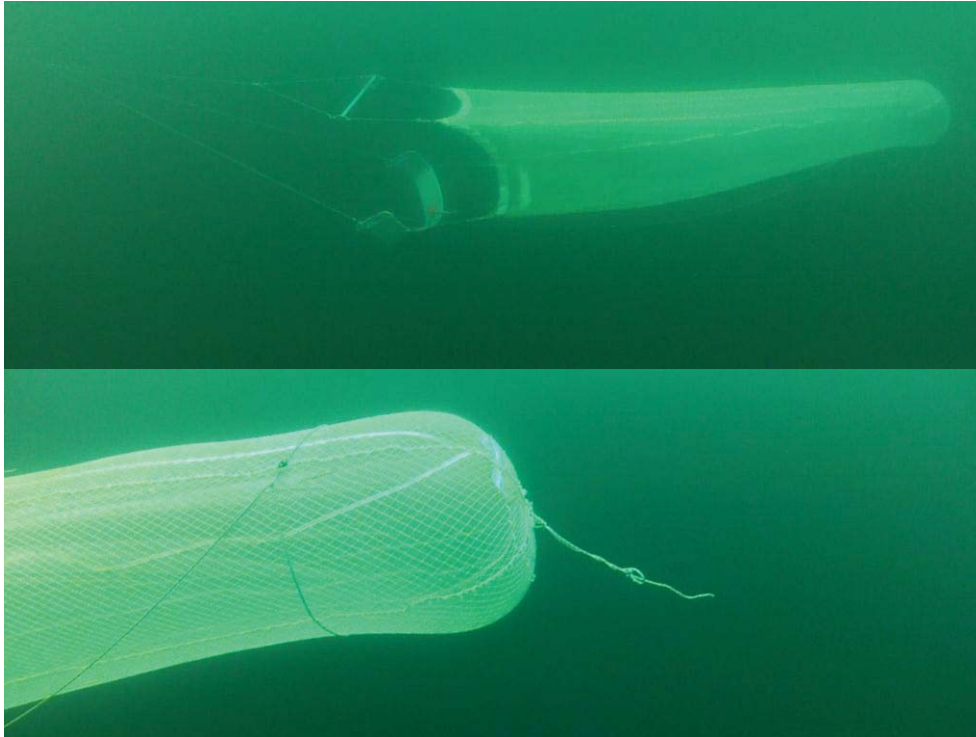


Figure 5: Screenshot from underwater recordings (ROTV-view) IKMT with codend configuration, as used during WH342 in 2011. Lower panel: close view of the codend.

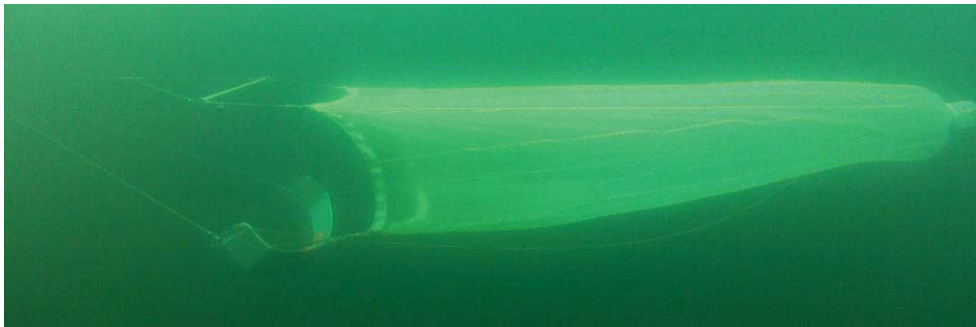


Figure 6: Screenshot from underwater recordings (ROTV-view) IKMT with new codend configuration. Lower panel: close view of the codend.

After finalizing the underwater observations of different gears, the vessel headed towards Bergen (Norway; arriving at 06/03/2013 10:00 UTC) to exchange scientific staff. At 08/03/2013 07:00 UTC, the vessel left Bergen in the direction of the calibration site in the Tysnesfjord (Uggdalseidet).

At this place, the calibration of the 4 frequencies was conducted successfully during day time from 08/03/2013 10:00 UTC to 09/03/2013 17:00 UTC.

The depth at calibration site was around 70m. The calibration went smooth, but was regularly interrupted by a thin ice layer drifting through the fjord.

Additionally, the calibration spheres were lost during the first day. Thanks to the hydroacoustic colleagues from IMR Bergen (Egil Ona), it was possible to continue the calibration procedure.

At 09/03/2013 17:00 UTC, the vessel left Tysnesfjord and steamed back to Bremerhaven (arriving 12/03/2013 10:00 UTC).

Table 1: FRV „Walter Herwig III“ Cruise WH363: station list

Station ID	Gear	Date (start)	time (start)	date (end)	time (end)	Latitude	Longitude
285	Bottom Trawl / ROTV	02/03/2013	12:34	02/03/2013	14:18	54°20,197N	007°26,871E
286	Bottom Trawl / ROTV	02/03/2013	14:48	02/03/2013	16:08	54°24,402N	007°35,745E
287	Bottom Trawl / ROTV	03/03/2013	07:10	03/03/2013	08:30	54°44,343N	007°31,362E
288	Bottom Trawl / ROTV	03/03/2013	09:06	03/03/2013	10:42	54°49,684N	007°41,935E
289	Bottom Trawl / ROTV	03/03/2013	11:30	03/03/2013	11:52	54°44,319N	007°30,919E
290	Bottom Trawl / ROTV	03/03/2013	12:46	03/03/2013	14:40	54°44,095N	007°30,091E
291	Bottom Trawl / ROTV	03/03/2013	15:00	03/03/2013	15:18	54°47,079N	007°31,407E
292	Pelagic Trawl / ROTV	04/03/2013	08:21	04/03/2013	10:34	57°46,554N	006°13,662E
293	Pelagic Trawl / ROTV	04/03/2013	11:41	04/03/2013	17:03	57°57,094N	005°57,046E
294	IKMT / ROTV	05/03/2013	08:34	05/03/2013	09:26	59°50,216N	004°21,657E
295	IKMT / ROTV	05/03/2013	11:38	05/03/2013	11:38	59°56,424N	004°28,340E
296	IKMT / ROTV	05/03/2013	14:40	05/03/2013	15:11	59°57,409N	004°25,587E
297	Calibration Echosounder	08/03/2013	10:00	09/03/2013	17:00	59°59,975N	005°28,364E

Personnel

Dr. Daniel Stepputtis	Scientist in charge	TI-OF
Juan Santos	Scientist	TI-OF
Ulf Böttcher	Electronic Engineer	TI-OF
Dr. Heino Fock	Scientist	TI-SF (Bremerhaven-Bergen)
Dr. Matthias Schaber	Scientist (hydroacoustics)	TI-SF (Bergen-Bremerhaven)
Dr. Eckhard Bethke	Scientist (hydroacoustics)	TI-SF (Bergen-Bremerhaven)
Florian Eggers	student	TI-OF (Bremerhaven-Bergen)
Tim Kirchner	student (hydroacoustics)	TI-SF

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