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19 March - 26 March 2012

Since arriving at Elephant Island a daily rhythm of the different disciplines developed quickly on *Polarstern*: In the morning at 6:00 a.m. fishing starts with sun rising and is closed at dusk. In between water parameters are determined using the CTD sensor (conductivity, temperature, depth) providing basic information for the fishery. During the night *Polarstern* transfers from shallow to deep waters to sample water and sediments for culturing bacterioplankton and deep-water foraminifers, respectively. Exactly at dawn we are back again at the next fishing station.

As mentioned in the first report we pursued fishing southerly of Elephant Island due to the weather conditions. Then we turned to the westerly shelf and reached our starting position after four days again. Thereafter, we proceeded on the westerly shelf of Elephant Island at beneficial weather conditions.

The trawling positions are taken using a randomised procedure and different depth zones up to 500 m. All data are combined to model the size of the entire population. After one week at Elephant Island some general trends became already visible: The abundance of fishes is quite low up to 100 m and below 300 m. The humped rockcod *Gobionotothen gibberifrons*, for several years the dominating fish species in this area up to 400 m, appeared only at low abundance. As we found only specimen larger than 38 cm no recruitment during the past 10 years might have strongly impaired the stocks of this species.

In contrast the fish stocks of the mackerel icefish (*Champsocephalus gunnari*) and the marbled rockcod *Notothenia rossii* have increased significantly. Both species have been nearly exploited during the late 1970th by fishing fleets from the former Eastern bloc. For long time no recovery of the stocks could be observed. On our cruise a strong correlation in abundance were observed with the main food source, the Antarctic krill, at the north-western shelf. Accordingly, Wednesday, March 21, became the most impressive day of this cruise so far: Large groups of fin whales in the surrounding and dense clouds on the echosounder up to 50 m indicated the presence of huge krill swarms. At this day at least three hauls with several tons of marbled rockcod each could be processed, indicating some recovery of the stocks. The mackerel icefish was found most abundant on the westerly and north-westerly shelf at 100 to 200 m. Similar to the marbled rockcod it fed nearly exclusively on krill.

As mentioned above not only fish, but also whales and seabirds were attracted by the krill swarms, a key species of the Antarctic food web. When approaching Elephant Island we frequently registered groups of fin whales with up to ten animals, including some juveniles. The indicated Wednesday will be kept in memory, not only by our professional whale watchers, Elke Burkhardt and Caterina Lanfredi: About 100 whales came together north-westerly of Elephant Island. As far as the eye could



Iceberg at Elephant Island (© S. Richter)



Multicorer on its way down (© M. Damerau)



Icefish lack red blood pigment: view of gills. (© C. Noever)



Concert of whale blows (© M. Wurst)

reach, whale blows became detectable, up to 30 just at a time on one photo: what an exceptional view! The work of the two observers is supported by an automatic whale detection system developed at the AWI, capturing whale blows with infrared cameras.

Accordingly, the detection of this seasonal and locally restricted event contributes to better understand the role of this area for the Antarctic food web.

With the highly efficient crew of *Polarstern* and indefatigably working scientists we are on the time schedule now. After about one week at Elephant Island we said goodbye on March, 26, pursuing our program north-easterly of King George Island.

With best wishes from all participants,

Magnus Lucassen