



CRUISE REPORT



R/V Aranda

Cruise 8/2017

SL1 2017
26 – 28 May 2017

This report is based on preliminary data and is subject to changes.

SL1 2017

Cruise number 8 / 2016, date 26-28.5.2016

Chief scientist Mika Raateoja

Description of the cruise

This cruise was part of HELCOM/COMBINE monitoring program, combined with enhanced environmental monitoring of Gulf of Finland. This leg of the Combine 2 cruise covers the Northern Baltic Proper, western and central Gulf of Finland, and Finnish territorial waters in the Gulf of Finland.

Monitoring parameters include:

- the hydrographic description of the water column (density, temperature, salinity)
- water transparency
- water chemistry (nutrients, pH, dissolved O₂)
- the parameters of biogenic origin (Chl *a*, *in vivo* fluorescence of Chl *a* as well as the taxonomic distribution and biomass of mesozooplankton and macrozoobenthos)
- marine litter

Also

- water and sediment samples were taken for STUK at two stations
- a mussel cage was deployed off Porvoo
- surface sediment was collected for MHS monitoring

Observations

The Gulf of Finland leg of the Combine 2 was held two weeks later than normally. Seasonal thermocline was developed and located at 10 to 15 m. Surface temperature ranged from 7 to 8 °C, and winter water layer had the range 2 to 3 °C.

The surface salinity was quite normal for the Gulf of Finland; in the west 6.0 to 6.5, about 5.5 in the fairway between Helsinki and Tallinn, and about 5 in the east. The western gulf had an extremely strong halocline locating between 50 and 60 m. A salt wedge from the Baltic Proper have risen the near-bottom salinities to the highest level since the start of Aranda's LIMS (1997). Salinity about 5 m above the bottom ranged from 10 to 11 from LL12 to LL7S; the near-bottom level is not yet known.

Situation reflected to very high PO₄ levels; at about half of the stations the near-bottom PO₄ was the highest observed. PO₄ levels in the mixed layer were high, too, but not exceptionally high. Typical near-surface level was 0.3 to 0.4 umol/l and 0.6 umol/l was found below the thermocline. Same PO₄ levels have been observed occasionally in the previous years, too, but typically this leg has been held before the mid-May.

Nitrate was exhausted from the upper 40 m in the west and in the upper 30 m in the middle parts of the gulf. We had some issues with nitrate analytics in the middle phases of the cruise, which were then overcome.

Strong halocline meant anoxic bottoms in the large deep areas in the western and middle gulf. Benthic animals were found in numbers only at LL4A that is off Loviisa.

Strong bloom of *Peridiniella catenata* took place at XV1 leading to exceptionally high surface pH values of about 9.2. High pH suggested that the algae were in a growing phase and thus not part of the waning spring bloom population.

During the leg we also clarified the possible effect of polarised sunglasses in the detection of Secchi-depth. We noticed that these lenses, whenever used, do not increase the observed Secchi-depth. They decrease the amount of scattered light and thus decrease the effect of sunglitter, but they also decrease the overall amount of light arriving to the eyes. The depth measured either with glasses or without was within the 0.5 m at all stations, that equals the precision of a Secchi measurement.

The zoobenthic and zooplanktonic sampling were audited during the cruise. No noticeable deviation was observed between documentation and practice.

Cruise personnel

Mika Raateoja	SYKE	26.-28.5.2017
Susanna Hyvärinen	SYKE	26.-28.5.2017
Panu Hänninen	SYKE	26.-28.5.2017
Marko Jaale	SYKE	26.-28.5.2017
Susanna Jernberg	SYKE	26.-28.5.2017
Milla Johansson	IL	26.-28.5.2017
Tarja Katajisto	SYKE	26.-28.5.2017
Pekka Kosloff	IL	26.-28.5.2017
Anna Kukkola	SYKE	26.-28.5.2017
Ilkka Lastumäki	SYKE	26.-28.5.2017
Sirpa Lehtinen	SYKE	26.-28.5.2017
Jere Riikonen	SYKE	26.-28.5.2017
Jouko Rissanen	SYKE	26.-28.5.2017
Tanja Kinnunen	SYKE	26.-28.5.2017
Eugenia Korshenko	SOI	26.-28.5.2017
Irina Panasenkova	SOI	26.-28.5.2017
Wardi Nicholas	BSAG	26.-28.5.2017
Kovalainen Alina	TURKU	26.-28.5.2017
Pekki Elina	RAAHE	26.-28.5.2017
Henrik Hedberg	SYKE	26.-28.5.2017
Joonas Rapila	SYKE	26.-28.5.2017

INDEX	STATION	LAT	LON	TIME	SECCHI	HYDROGRAPHY	CHEMISTRY	CHL	ZPL	BENTHOS	LITTER	STUK	SEDIMENTS	METAL
424	39A	60°04.01'	24°58.81'	26.5.17 07:46		x	x							
425	XII3	59°52.01'	23°58.81'	26.5.17 11:23		x	x							
426	LÄNGDEN	59°46.61'	23°15.77'	26.5.17 14:26		x	x	x	x	x	x			
427	AMN	59°41.43'	23°15.43'	26.5.17 17:57		x	x			x				
428	LL12	59°29.01'	22°53.81'	26.5.17 20:34		x	x	x	x	x	x			
429	LL11	59°35.01'	23°17.81'	27.5.17 00:07		x	x			x				
430	JML	59°34.91'	23°37.61'	27.5.17 02:25		x	x			x		x	x	
431	LL9	59°42.01'	24°01.81'	27.5.17 05:50		x	x	x	x	x	x			
432	GF1	59°42.30'	24°40.93'	27.5.17 09:13		x	x	x	x	x	x			
433	LL7S	59°51.01'	24°49.81'	27.5.17 12:00		x	x	x	x	x	x			
434	LL6A	59°55.01'	25°01.81'	27.5.17 14:51		x	x			x				
435	LL5	59°55.01'	25°35.82'	27.5.17 17:33		x	x			x				
436	CAGEPORVO	60°18.13'	25°34.40'	27.5.17 20:49		x	x							x
437	XIV3	60°12.19'	26°11.57'	28.5.17 01:52		x	x				x			
438	XV1	60°15.00'	27°14.82'	28.5.17 05:30		x	x	x	x	x	x		x	
439	LL3A	60°04.03'	26°20.80'	28.5.17 11:39		x	x	x	x	x	x	x	x	
440	LL4A	60°01.01'	26°04.81'	28.5.17 16:00		x	x			x				
441	GF2	59°50.31'	25°51.41'	28.5.17 18:53		x	x			x				