

Cruise report Oosterschelde

April 10-12, 2006

Ronnie van Overmeeren, TNO Built Environment and Geosciences

Ms. Schollebaar (LNV)

Crew: Cees Baaij, Gilles Ros en Rob Cornelissen

TNO: Ronnie van Overmeeren

Objectives of survey

The acoustic survey formed part of a test to remove Japanese oysters (*Crassostrea gigas*) by intensive fishing of selected parts of oyster banks and to monitor afterwards the further development of the oyster banks. The present survey, conducted from 10-12 April 2006, was the 1-measurement, immediately after the removal of the oysters. Sidescan sonar measurements were made over the three oyster banks. Also the two dumping sites of the fished oyster shells were acoustically surveyed.

Area and acoustic tracks

The survey area is located in the eastern part of the Oosterschelde (Eastern Scheldt) estuary in the SW of the Netherlands (figure 1).

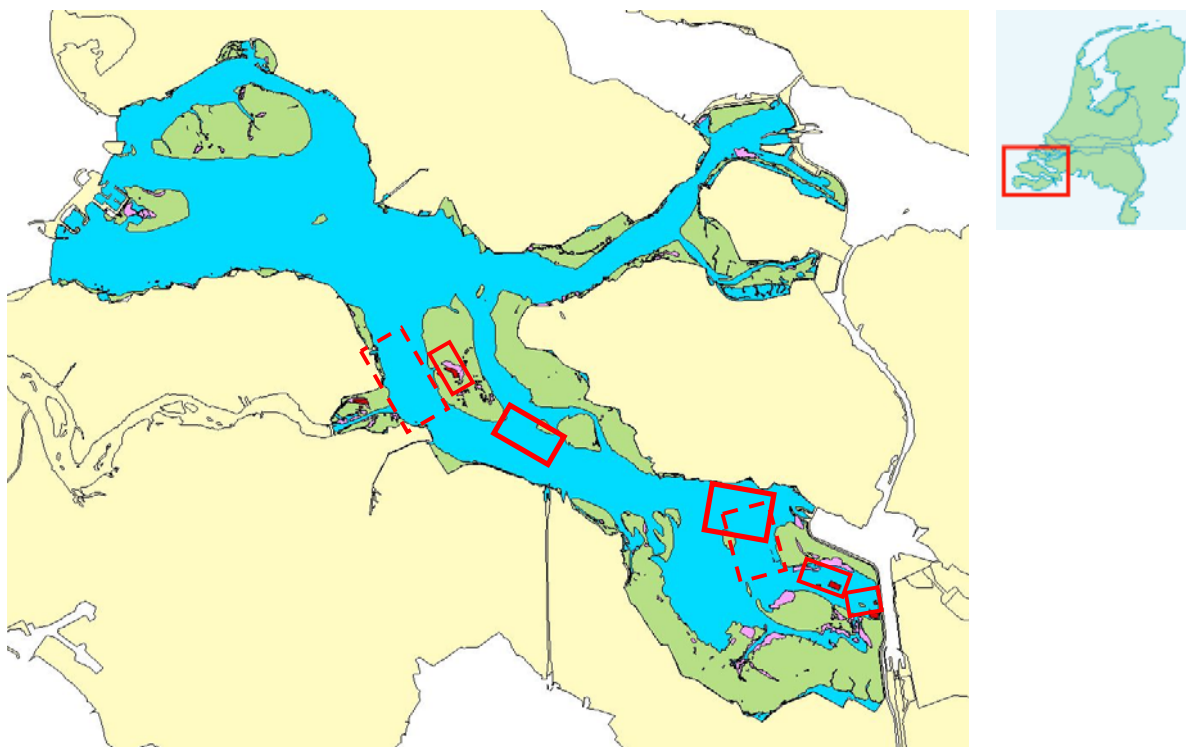


Figure 1 Oosterschelde with (in red) the location of oyster banks en de blocks where the acoustic survey was conducted; dashed boundaries mark areas of surveys in February 2006 only. From West to East: Engels Vaarwater, Vondelingsplaat, Middelpmaat, Bol, Lodijsche Gat, Marollegat en Zilverput.

The coordinates of the boundaries of the survey areas of the 3 oyster banks (Vondelingsplaat, Marollengat, Zilverput) as well as those of the 2 dumping sites (Middelplaat, Bol) are listed in table 1. The boundaries of the areas where oysters were removed are listed in table 2; these areas are shown in green on figure 2.

Table 1: Coordinates of the corner boundaries of the survey areas over 3 oyster banks and 2 dumping sites

Survey area	X coord (longitude)	Y coord (latitude)
Vondelingsplaat	3.941943122	51.573074575
Vondelingsplaat	3.951502421	51.564130658
Vondelingsplaat	3.943426141	51.560920695
Vondelingsplaat	3.933348257	51.569812563
Marollengat	4.197171623	51.484061280
Marollengat	4.194799686	51.480072716
Marollengat	4.183613140	51.482807585
Marollengat	4.186483313	51.486981296
Zilverput	4.218241346	51.475994871
Zilverput	4.219668008	51.469761481
Zilverput	4.212239941	51.469246457
Zilverput	4.210643066	51.475343207
Middelplaat	4.005029593	51.541375668
Middelplaat	4.003505928	51.539334944
Middelplaat	3.996975045	51.541235159
Middelplaat	3.998498479	51.543275967
Bol	4.129274243	51.509455104
Bol	4.126357505	51.508138143
Bol	4.122150368	51.511787358
Bol	4.125067216	51.513104423

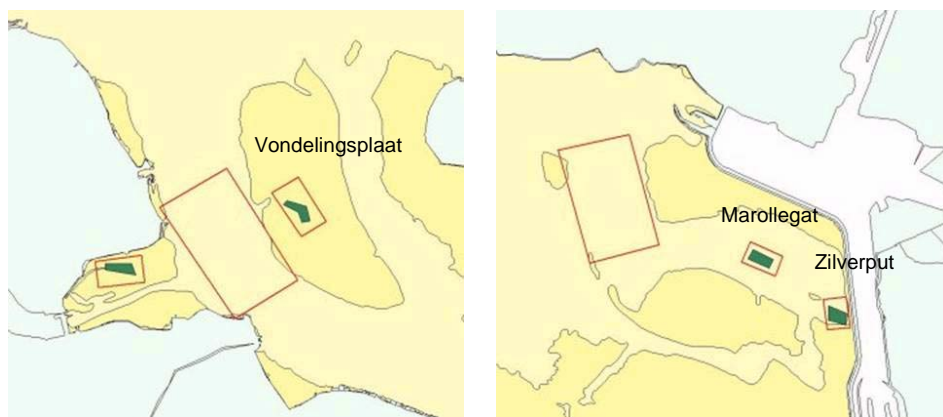


Figure 2 The 3 survey areas of the 1-measurement over oyster banks in the Oosterschelde shown in more detail. Green blocks mark the selected areas where oysters were removed.

Table 2: Coordinates of the boundaries of the areas where oysters were removed

Survey area	Coordinates (degrees, decimals)	
	Longitude	Latitude
Zilverput	4,218351003	51,470261006
	4,212518003	51,471091006
	4,212439003	51,474166006
	4,218608003	51,472547006
Marollengat	4,192701923	51,481564206
	4,185734093	51,483460586
	4,187275513	51,485415916
	4,194096633	51,483482416
Vondelingsplaat	3,937132003	51,567358006
	3,938435003	51,568203006
	3,944926003	51,567078006
	3,946156003	51,564154006
	3,943507003	51,563805006
	3,942233003	51,565869006

The tracks measured by sidescan sonar are shown in figure 3 and details are given in table 3. All sidescan sonar recordings were made with a C-Max CM2 system. Navigation speed during the sidescan sonar measurements varied between 4 and 5 kts.

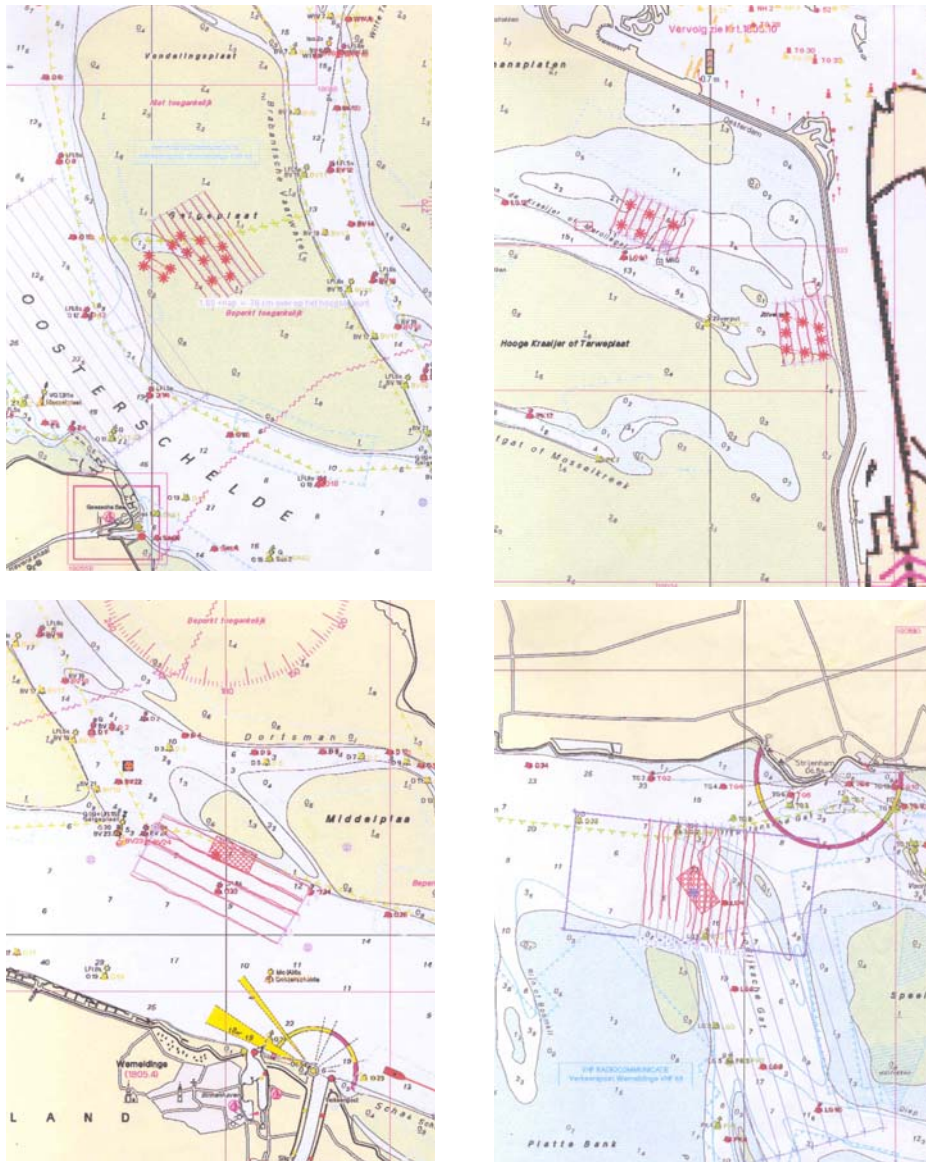


Figure 3 Sidescan sonar tracks recorded by the survey ship Schollebaar in April 2006; upper left: Vondelingsplaat, upper right: Marollegat and Zilverput, lower left: Middelpilaa, lower right: Bol. Asterisks mark the boundaries of the areas where oysters were removed (upper maps) and the buoys for docking in the dumping sites (below). Honeycomb patterns map dumping sites (below).

Table 3: Details of the sidescan sonar tracks in the 5 survey areas of April 2006

	Survey area	Number of tracks	Approximate length	Track interval (m)	System	Range (m)
1	Marollengat	9	500 m	100	CM2	50
2	Vondelingsplaat	8	1 km	100	CM2	50
3	Zilverput	6	700 m	100	CM2	50
4	Bol	13	1.3 km	100	CM2	50
5	Middelpilaa	5	2 km	200	CM2	50

Equipment specifications

- Sidescan sonar: - C-Max CM2, 325 kHz, towed
- GPS - Del Norte 5012 GPS (positions in UTM zone 31, WGS84)

Data format and storage

Sidescan sonar data

C-Max sidescan sonars employ their own system format, in which the data are stored on magneto optical disks. C-Max software (MaxRead) is used to convert the data in C-Max format to the more conventionally used QMIPS format. All sidescan sonar data collected during this survey was converted to QMIPS and stored on CD-ROM.

Logbook (time in UTC; local (summer) time is UTC+2)

Monday 10 April 2006

NNE 4/5 Bft; height of waves 0.5-1 m

- 07:00 Arrival Yerseke
- 10:15 Departure harbour Yerseke
- 11:30 Start SSS survey Marollegat; measuring 9 tracks: MG060401 t/m MG060409.
- 12:19 End of SSS measurements Marollegat
- 12:27 Start SSS survey Zilverput; measuring 6 tracks: ZP060401 t/m ZP060406.
- 13:10 End of SSS measurements Zilverput
- 13:53 Start SSS survey Bol; measuring 3 tracks: BL060408, BL060412 and BL060413.
- 14:33 End of SSS measurements Bol; return to Yerseke.
- 15:05 Arrival harbour Yerseke

Tuesday 11 April 2006

Morning: NNE 3/4 Bft; height of waves 0.5 m; afternoon: NNE 5 Bft; height of waves 0.5-1 m.

- 06:20 Departure harbour Yerseke
- 06:50 Arrival survey area Bol
- 06:53 Start SSS survey Bol; measuring 10 tracks: BL060401 t/m BL060407 and BL060409 t/m BL060411.
- 10:05 End of SSS measurements Bol; departure for survey area Vondelingsplaat.
- 12:44 Start SSS survey Vondelingsplaat; measuring 8 tracks: VP060401 t/m VP060408.
- 14:04 End of SSS measurements Vondelingsplaat; return to Yerseke.
- 15:10 Arrival harbour Yerseke

Wednesday 12 April 2006

WNW 4/5 Bft; height of waves 0.5 – 1 m

- 05:55 Departure harbour Yerseke
- 06:15 Arrival survey area Middelpmaat
- 06:21 Start SSS survey Middelpmaat; measuring 5 tracks: MP060401 t/m MP060405. Problems with the connection/communication with the towfish. On pulling cable, towfish stops operation. Two tracks (MP060403 and MP060404) repeated without changing towing length.
- 08:34 End of SSS measurements Middelpmaat; return to Yerseke.
- 09:10 Arrival harbour Yerseke; end of survey.