

## Manual for harbour sampling of fish for human consumption conducted by DTU Aqua

Revised 04/06 - 2019

### Background

In 2015 a new random selection system was introduced in the harbour sampling program in Denmark. Before 2015 the harbour sampling was conducted as quota sampling where a known harbour was called beforehand and the relevant species was sampled until the wanted numbers of boxes/fish per sorting size was obtained per quarter. This system could have the disadvantage that a large amount of fish was measured on the same day / from same vessel as the effort was the numbers of boxes and not the numbers of harbour visits. The system is based on the outcome from ICES working group WKPICS2.

### Sampling design

The new system is trying to obtain a minimum of 80% of all landings by weight, values and trips of the relevant stocks (area X species) are covered in the sampling program. All stocks Denmark is obliged to sample according to the EU commission implementing decision (2016/1701) of 19 August 2016, from human consumption landings have been listed by area (table 1).

**Table 1. Species list Denmark are obliged to sample by area**

Stock	Speices (Danish name)	Sample area
Cod 2224	TOR	22-24
Cod 2532	TOR	25-32
Cod 21	TOR	21
Cod IV + IIIAN	TOR	IV+IIIA
Ple 2123	RSP	21-23
Ple 2432	RSP	24-32
Ple IV+ 3AN	RSP	IV+IIIA
Dab 2232	ISG	22-32
Dab IV + IIIA	ISG	IV+IIIA
Tur IV	PGH	<b>only IV</b>
Sai IV +IIIA	MSJ	IV+IIIA
Lin IV + IIIA	LNG	IV+IIIA
Hke IV+IIIA	KLM	IV+IIIA
Had IV+ IIIA	KUL	IV+ IIIA
Wit IV+ IIIA	SKI	IV+ IIIA
Ang IV	HAT	<b>only IV</b>
Lem IV + IIIA	RTG	IV + IIIA
Sol IV	TNG	<b>IKKE INDSAMLELS MERE</b>
Hav IV	Havkat	<b>IV</b>

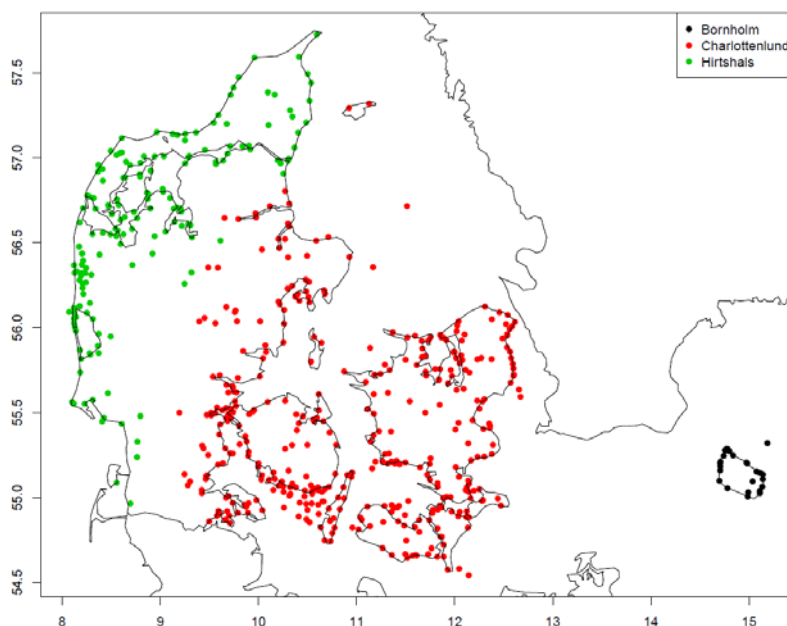
Flounders in 22-32 and sole in IIIa and 22 are also selected for sampling. However, due to the relatively low landing levels a separate sampling program has been introduced for these stocks where the landing fraction is sampled in the observer program. Furthermore, the sole is also sampled in a self-sampling programme.

All harbours have been listed and the harbours were ranked by 80% of the landings in weight, value and trips by stock were selected for sampling. A fourth parameter was included before the harbours were ranked, the cost of sampling in the selected harbour. Then the harbours were ranked

after importance, were all 4 parameters had equal weight and divided in large and small harbours with a different effort depending on the harbour size. The 6 largest harbours (by quarter) received 4 visits per quarter the small only 1 visit per quarter (this was changed from 2019 – before it was 3 visits by quarter and the 5 largest harbours) . Each harbour is considered as a separate draw list. A sampling event list was conducted were all harbours had a preselected time for sampling and the time period for the harbour sampling event was for logistic reasons chosen to be a 14 days period. Not all stocks have been selected for each harbour and when a sampling event is conducted in a given harbour all stocks selected for that specific harbour is to be sampled if they are landed on the given day. For each species the minimum numbers of sorting boxes is sampled (1 boxes per sorting group, if present). If not all sorting sizes within a given species are present or if not all species on the list have been landed on the given sampling day, there will not be sampled the following day, but first at the next planned sampled event to the harbour.

Due to logistics the harbours have been divided in 3 areas according to the location of staff. One is in the northern Denmark (Hirtshals), one on Sjælland (Charlottenlund) and one on the Island Bornholm.

**Figure 1. Harbours divided by areas.**



As this system is not taken into account how important a given stock is, all stocks are sampled at equal level if present at the harbour, this gave a rather large sampling effort for all flatfish species (more fish per box) and a lower number of round fish. It was therefore introduced that only 2 flatfish per cm needed to be aged and weighted per box per visit.

Furthermore, stocks with a none analytic assessment (DLS stocks) was having an increased sampling effort by the new system as well. Therefore, a further differentiation was introduced were DLS stocks were only sampled in the large harbours 1 every quarter (table 2).

Presently, we have no system for selection of the boxes in the harbour.

**Table 2. Overview of assessment type**

Stock	DLS	Analytic
ANG-4	X	
CAT-4	X	
COD-21		x
COD-2224		x
COD-2532		x
COD-43AN		x
DAB-2232	X	
DAB-43A	X	
GUG-4	X	
HAD-43A		X
HER-2232		X
HER-3A		X
HKE-43A		X
LEM-43A	X	
LIN-43A	X	
PLE-2123		X
PLE-2432	X	
PLE-43AN		X
SAI-43A		X
TUR-4	X	
WHG-3A	X	
WIT-43A	X	

## Sampling plan for 2017

Each harbour has a sampling plan by quarter. A full list of numbers of sampling event by harbour can be found in annex 4.

Quarter	3	HUNDESTED
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Date	stock	Area.	Sort. 1	Sort. 2	Sort. 3	Sort. 4	Sort. 5	IND SAMPLER
Uge 34-35	VEST TORSK	22-24	1 ks.	1 ks.	1 ks.	1 ks.	1 ks.	Frank
TOTALT INDSAMLET			0	0	0	0	0	
Uge 34-35	ØST TORSK	25-32	1 ks.	1 ks.	1 ks.	1 ks.	1 ks.	Frank
TOTALT INDSAMLET			0	0	0	0	0	
Uge 34-35	KATTEGAT TORSK	21	1 ks.	1 ks.	1 ks.	1 ks.	1 ks.	Frank
TOTALT INDSAMLET			0	0	0	0	0	
Uge 34-35	RØDSPÆTTE	24-32	1 ks.	1 ks.	1 ks.	1 ks.		Frank
TOTALT INDSAMLET			0	0	0	0		

Example of sampling plan for Hundested harbor.

## Processing of human consumption fish in the harbours

- Round fish: Length distribution is measured for all fish within the sorting group by cm per box. Individual weights for all fish and if possible both otoliths for every fish.
- Exception: As small cod and hake (commercial size sorting 3 and 4 for hake and size sorting 5, 6 and BMS are relatively alike in size structure a full box is not needed for sampling but 2 fish / cm / box is sampled.
- Flatfish Length distribution for all fish within the sorting group by cm. 2 fish by cm for individual weight measurements and for otoliths (both otoliths if possible). The flatfish processed for weight and age needs to be punched in as "ej rep" – not representative.
- All plaice and sole needs to be sexed since 2017.

An illustration of how a length measurement needs to be conducted can be found in annex 1 and how otoliths needs to be stored in annex 2.

### Human consumption Flounder and Sole collected in the observer program

Biological information from these two stocks is to be collected in the “at sea observer program”.

- Sole from area 20-21-22 has to be collected with 1 fish per cm per station (including human consumption sizes)
- Flounder from area 22-26 has likewise to be collected with 1 fish per cm group per station (including human consumption sizes).
- The fish needs to be punched in on station level with all other information on that station (see observer manual).

### Information needed from the vessels

For every sorting box sampled information is needed on:

Information	Example
Sampling number:	26
Vessel length	12-24 m
Gear	Bundtrawl
Vessel ID.:	E 1279
Evt. makkerfartøjsnr.:	
Date for landing:	15. januar 2002
Landing harbour:	Hvide Sande
Gear code:	OTB
Mesh size	120 mm
Area:	IVb
ICES square:	38F5
Target species:	TOR

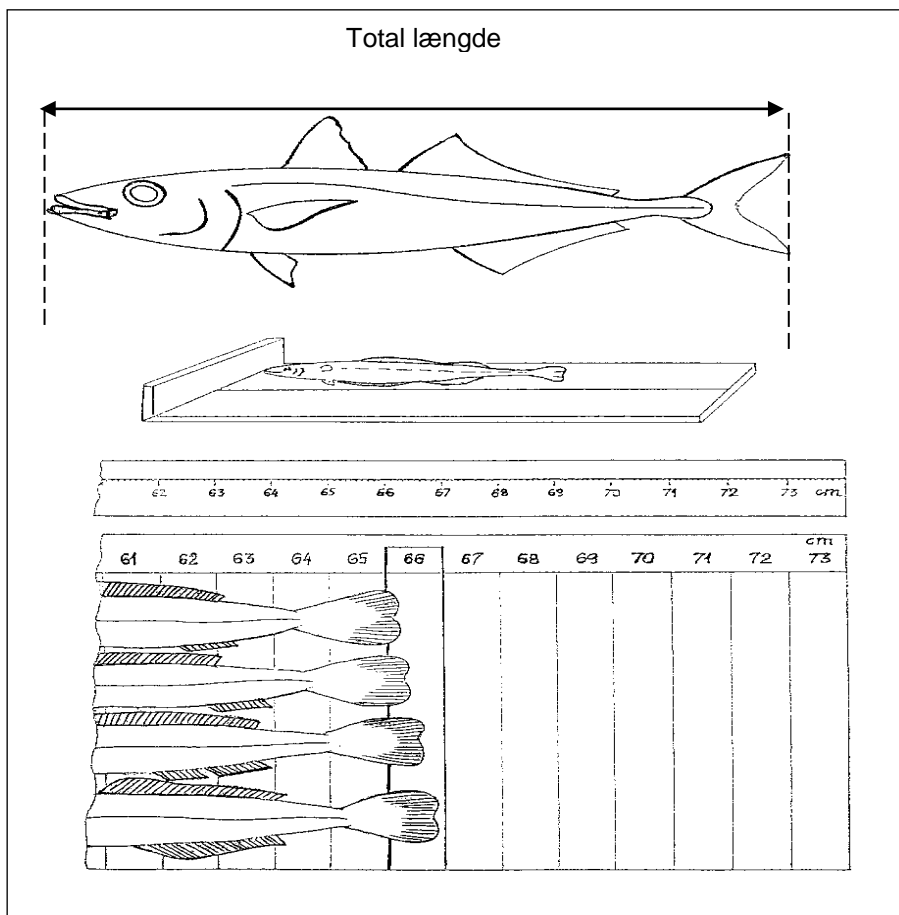
It is very important we have the correct information. If this information is uncertain the box should be discarded and another box with the relevant information present selected instead.

Special attention has to be on:

- Fishing area:
- Gear type:
- Catch date:
- Logbook number

The template for the data information needed at the harbour visit is found in annex 3.

### Annex 1. Length Measurements



## Annex 2. Otoliths

It is important the the otoliths have correct labels, and fish number 16 needs to match fish 16 in the otolith tray. For round fish a tray with 18 holes are used Remember to add information with vessel ID, date, species, Sorting group and number Nr. 1-18 (nr. 19-36, nr. 37-54, etc.). The information needs to go on the left side

Fartøj nr:	1	2	3	4	5	6	7	8	9
Dato:									
Art:									
Sort:	10	11	12	13	14	15	16	17	18
Nr. 1-18:									

For flatfish we use the black otolith trays with 50 holes. Same information needs to be attached.

Fartøj nr:	1	2	3	4	5	6	7	8	9	10
Dato:										
Art:										
Sort:	11	12	13	14	15	16	17	18	19	20
Nr. 1-50:	21	22	23	24	25	26	27	28	29	30
	31	32	33	34	35	36	37	38	39	40
	41	42	43	44	45	46	47	48	49	50





#### Annex 4. Numbers of sampling event per harbour site and stock in 2019.

Sum of pr. kv.	Column Labels																				Grand Total		
Row Labels	ANG-4	CAT-4	COD-21	COD-2224	COD-2532	COD-43AN	DAB-2232	DAB-43A	FIH/RIE	HAD-43A	HER-2232	HER-3A	HKE-43A	LEM-43A	LIN-43A	PLE-2123	PLE-2432	PLE-43AN	SAI-43A	TUR-4	WIT-43A	(blank)	Grand Total
Bagenkop				3			4									4							11
Bønnerup																1							1
Darlowo				3	3																		6
Dragør				1																			1
Elløs												2											2
Fåborg				5			2									7							14
Gilleleje			16	4							4	8				16							48
Grenå			2								1	1				2							6
Hanstholm	4	4				16		4		16			16	4	4			16	16		4		104
Hirtshals			4			16		3		12				1				12			4		52
Hundested			2															1					3
Hvide sande				18			4	3						4		16	1	16		4			66
Kiinholm havn				3			2				1						3						9
Kolobrzeg					2												1						3
Korsør																1							1
Langø				2												3							5
Nexø				1	10													1					12
Rødvig																		2					2
Rønne				7							4						1						12
Skagen						4					1	8								8			21
Skudehavnen/københavn				1																			1
Sletten							1				2												3
Strandby (nordjylland)			9							1						4			5		4		23
Tejn																	2						2
Thorsminde								1										1		3			5
Thyborøn	4	4		4		16	1	4		16	4		16	4	4			16	16	4	3		116
Vedbæk				1												1							2
Wladyzlowowo					3																		3
Øresund?									5														5
(blank)																							
<b>Grand Total</b>	<b>8</b>	<b>8</b>	<b>33</b>	<b>53</b>	<b>18</b>	<b>52</b>	<b>14</b>	<b>15</b>	<b>5</b>	<b>45</b>	<b>17</b>	<b>19</b>	<b>32</b>	<b>13</b>	<b>8</b>	<b>55</b>	<b>12</b>	<b>61</b>	<b>45</b>	<b>11</b>	<b>15</b>	<b>539</b>	