

## Oparbejdning af sild fra IBTS (International Bottom Trawl Survey februar og august) projektnr. 39057 eller 39058

IBTS togt er et standard EU-togt, hvor man undersøger de nye årgange af sild, brisling, rundfisk og fladfisk i Nordsøen, Skagerrak.

Sildene bliver målt ombord og pakket i poser med 1 stk. fra hver semicm.-grupper fra hver station. Poserne bliver samlet i en stor pose evt. 2 poser hvis der er mange længdegrupper.

Poserne bliver mærket med dato, stationsnummer og square.

Prøverne bliver taget ud af fryseren dagen før oparbejdning.

Poserne lægges op på bordet i størrelsesorden med den mindste længdegruppe før.

I poserne ligger med en artosilmærke med sc-gruppen på.

Prøven journaliseres i den røde mappe og får dermed også et journalnummer. Der bruges station-landingskema som forside og enkeltfisk skemaer til individerne.

Sildene tages ud af posen og vejes enkeltvis i hele gram og noteres og lægges på plader.

Den første sild mærkes med togt, station og j.nr. og fisk nr. 5, 10, 15 osv. bliver mærket med fisker nr. Hvis man opdager andre arter end sild (f.eks. brisling), så smides denne ud med det samme. Denne art skal altså ikke registreres.

Efter endt vejning checkes om antallet af sild på pladerne er det samme som på skemaerne.

Herefter udtages otolither. Begge otolither udtages og overføres i de sorte otolithbakker som er kun egnet til sild. Otolitherne tørres af for blod og væv.

Hvis genetik skal tages, se " Vævsprøver til genetikanalyser manual\_2022"

Otolithbakkerne mærkes med labels påført togt, station, og journalnummer og fiske nr. (1-25, 26-50 osv.).

Sildene modenhedsbestemmes efter den nye modenhedsskala N. Se bilag 1.

Anisakis i bugen eller omkring tarmen tælles. 0=ingen, 1=mellem 1-5, 2=over 5. Noteres også i bemærkninger. Se bilag 2.

# Bilag 1.

## Modenhedsbestemmelse

### Updated Atlantic Herring Maturity Manual following the WKMATCH 2012 maturity scale revised (*Clupea harengus*)

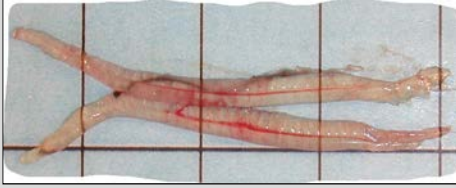
Present maturity scale -> 2018/2019		WKMATCH 2012 maturity scale revised - implement by 1st Jan. 2020		
Stage	Description	Stage	Substage	Description
1	Immature	A	A	Immature
2	Early maturation /repeat spawner	B	Ba	Developing but functionally immature (first time developer)
3	Mid maturation		Bb	Developing and functionally mature
4	Final maturation			
5	Spawning prepared			
6	Spawning active	C	Ca	Actively spawning
			Cb	Spawning capable
7	Spent - regeneration	D	Da	Regressing
			Db	Regenerating
		E	E	Omitted spawning
8	Abnormal	F	F	Abnormal

Females	Males
<b>A. Immature</b>	
Ovaries very small, transparent, no eggs visible to naked eye, up to 3 mm wide. Ovaries have a pointed end and are shaped like a torpedo.	Testes very small, transparent up to 3 mm wide. Testes have a rounded end and are shaped like a scalpel.
<b>Ba. Developing but functionally immature (first-time developer)</b>	
Gonad has undergone development but unclear whether it will spawn in current year. Technically the fish is sexually mature, due to gonad development, but it is either a specimen developing for the first time or a species with a reproductive cycle longer than a year and in the first year of development ( <b>will not take part in spawning current year.</b> )	
<b>Bb. Developing and functionally mature</b>	
Ovaries somewhat larger in volume than stage A: 3-8 mm wide. Oocytes visible with magnifying glass. Still transparent. As ovary develops the lobes become more swollen and opaque, occupying about 1/2 of the ventral cavity. Yellow/white oocytes in lamellae visible to naked eye. Further development, ovaries become pale yellow, filling about 2/3 of the ventral cavity, oocytes distinct and grainy but not hydrated yet. At the end of stage B, ovaries fill the ventral cavity, large hydrated oocytes present. Ovaries don't run under pressure.	Testes somewhat larger in volume than stage A: 3-8 mm wide. Still transparent. As testes develops, the lobes become more swollen and opaque, occupying about 1/2 of the ventral cavity. Reddish grey or greyish. Further development, testes nearly filling 2/3 of the ventral cavity, milt whitish. At the end of stage B, testes filling ventral cavity, milt white, not yet running.
<b>Ca. Actively spawning</b>	
Ovaries run when light pressure is applied, eggs transparent.	Testes run when slight pressure is applied.
<b>Cb. Spawning capable</b>	
Within the period of reproductive activity, stage Cb refers to the brief post-spawning stage when batch spawners over a short period release their oocytes.	
<b>Da. Regressing</b>	
Ovaries slack with residual eggs. Ovaries quite pointy (for sex determination)	Testes baggy, bloodshot. Testes still have more or less scalpel shaped ends (for sex determination).
<b>Db. Regenerating</b>	
Ovaries are firm and larger than early developmental stage of stage Bb. Walls striated vertically and blood vessels prominent.	Testes are firm and larger than early developmental stage Bb. Walls striated vertically and blood vessels prominent.
<b>E. Omitted spawning</b>	
Gonads small as in early developmental stage of Bb with signs of previous spawning. Typically, a gonad found during the pre-spawning/spawning season without any signs of maturation.	
<b>F. Abnormal</b>	
Intersex, infections, sclerosis or necrosis (atrophy)	

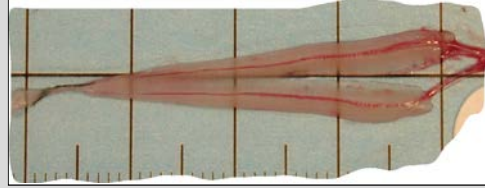
FEMALE

MALE

**A**  
Immature

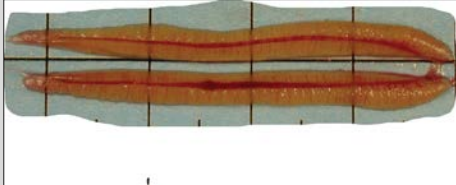


Baltic Sea F HER - LT: 14.1cm, WT: 16g WG: <0.1g DOC: March



Baltic Sea M HER - LT: 12cm, WT: 12.1g WG: <0.1g DOC: Nov.

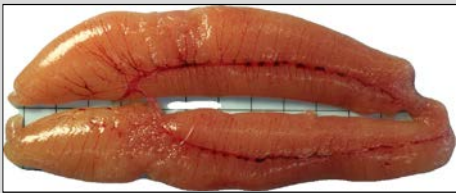
**Ba / Bb**  
Developing



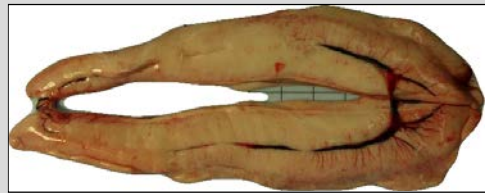
Baltic Sea F HER - LT: 15cm, WT: 23.3g WG: 0.2g DOC: Nov. (early maturation - first time spawner)



North Sea M HER - LT: 25.5cm, WT: 144.4g WG: 0.7g DOC: July (early maturation)

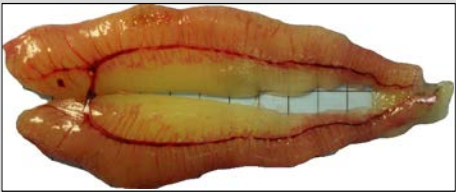


Baltic Sea F HER - LT: 28cm, WT: 181.6g WG: 51.4g DOC: April (late maturation)

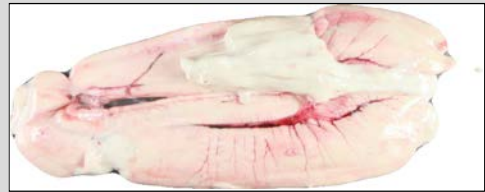


Baltic Sea M HER - LT: 28cm, WT: 171.1g WG: 32.1g DOC: Nov. (late maturation)

**C**  
Spawning

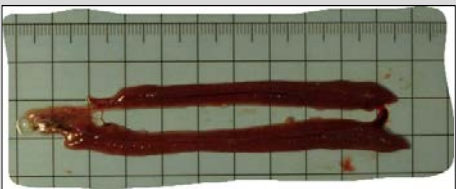


Baltic Sea F HER - LT: 29cm, WT: 174.8g WG: 34.2g DOC: April



English Channel M HER - LT: 30cm, WT: 273g WG: 73g DOC: Nov.

**Da**  
Regressing



Baltic Sea F HER - LT: 30.5cm, WT: 192.1g WG: 2.8g DOC: Nov.

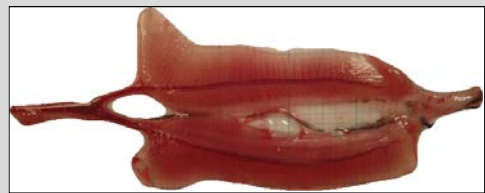


Baltic Sea M HER - LT: 19.1cm, WT: 37.5g WG: 0.32g DOC: Nov.

**Db**  
Regenerating



North Sea F HER - LT: 31cm, WT: 258.8g WG: 3.5g DOC: July



Baltic Sea M HER - LT: 22cm, WT: 62.8g WG: 0.5g DOC: March

## Bilag 2.

### Undersøgelse af anisakis

Sild bliver inficerede med Anisakis via euphausiider (lyskrebs/krill), som kun findes i det mere saline miljø i Nordsøen og Skagerrak/Kattegat. Derfor kan man bruge Anisakis som en indikator på individets seneste migrations adfærd. Der er de senere år blevet fundet Anisakis i sild fra den østlige Østersø, hvilket tyder på, de også migrerer op gennem de danske farvande og dermed er en del af fangsterne i vores 'store mix' i fødeområdet. Hvis vi skal have en idé om størrelsen af denne andel af østlig Østersø-sild i fangsterne er vi nødt til at bruge både mål af Anisakis og otolithmorfologi som naturlige mærker.

Koder: (skrives i bemærkningsfeltet i journalbladene)

0 = ingen anisakis observeret

1 = 1 til 5 anisakis

2 = flere end 5

