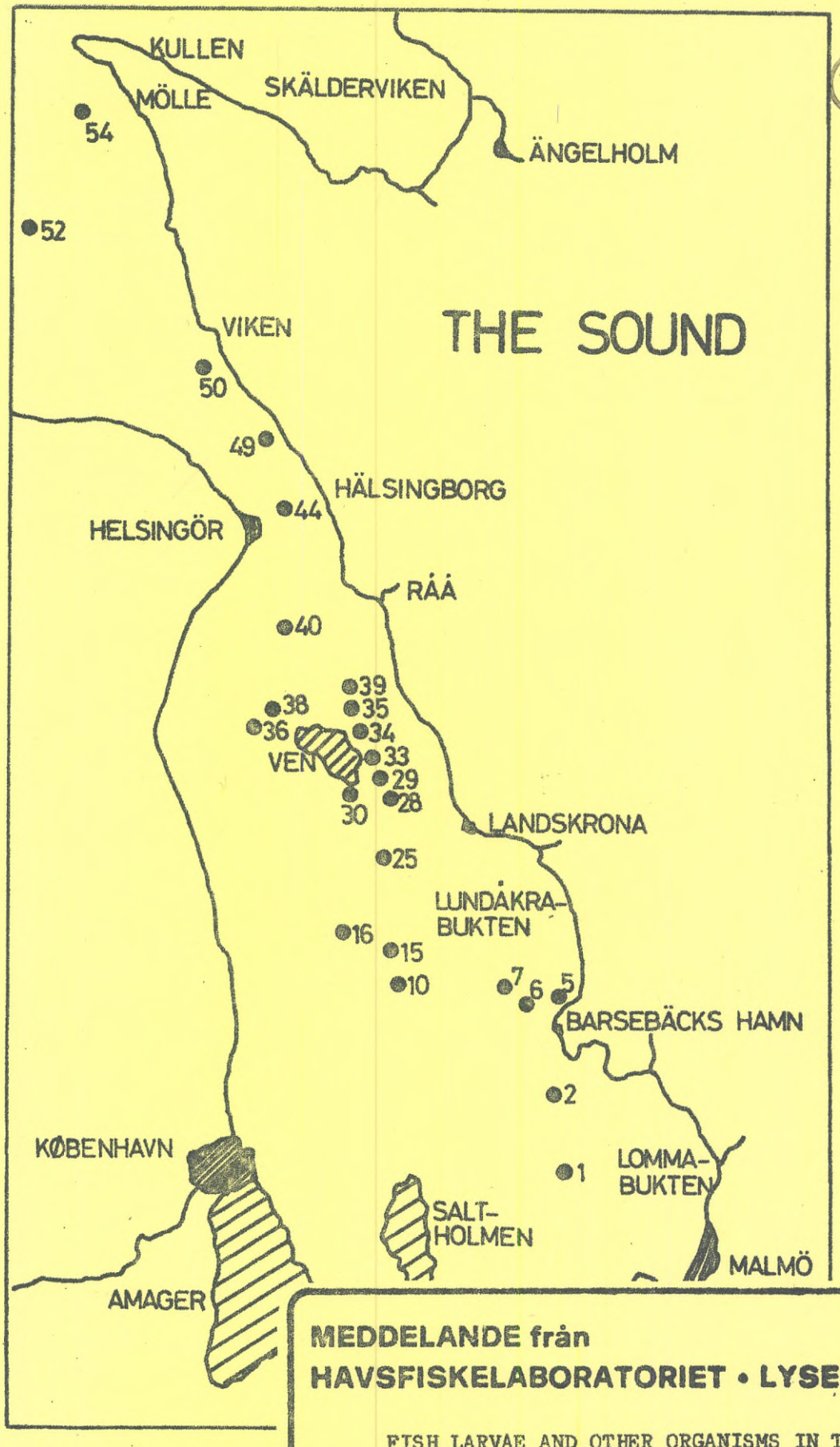

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FISH LARVAE AND OTHER ORGANISMS IN THE SOUND AND THE BALTIC SEA DURING THE YEARS 1912-1926 (1927)

by

Sten Vallin

April 1975

Fish larvae and other organisms in the Sound and the Baltic Sea during the years 1912 to 1926 (1927)

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(To be completed with the material from the R/V "Mystrasalt" and "Skagerak".)

Introduction

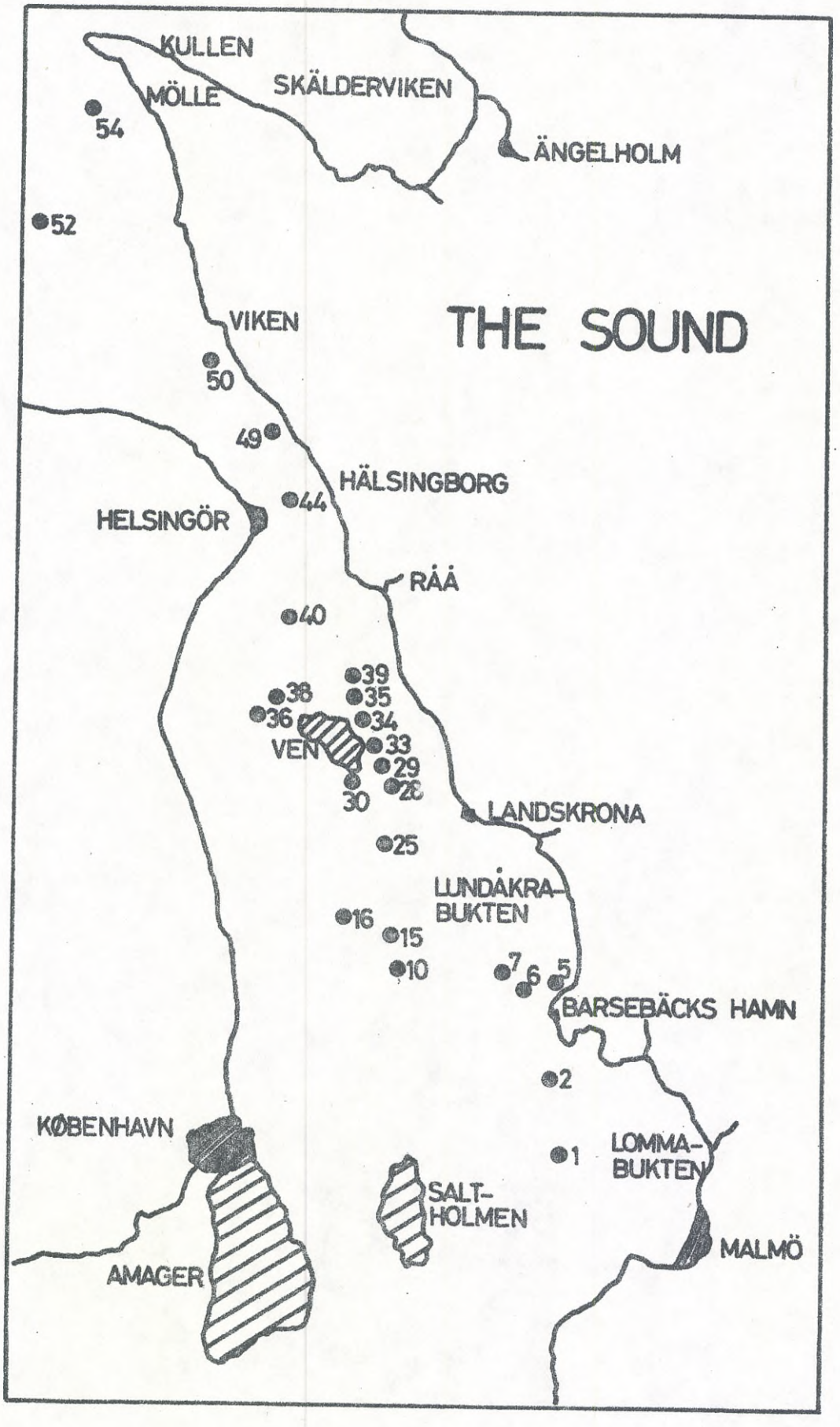
During the years 1912-1918, marine biological investigations were made in the Sound on the initiative of Professor Hans Wallengren, head of the Institute of Zoology at the University of Lund. In addition, a month's course was held every summer for advanced studies, at which I was engaged as an assistant. One task in my post-graduate studies during these years was collecting specimens, in the first place pelagic fish eggs and fish fry from the Sound. A Scherbrutnetz, which proved to be the most suitable gear for this purpose, was used as a rule. The approximate depths of horizontal hauls at varying depths could be determined with a good degree of exactness on the basis of the length of the cable and the speed of the vessel. To obtain a more or less complete collection of fish fry, etc., the summer samples were complemented by expeditions made during autumn, winter and spring.

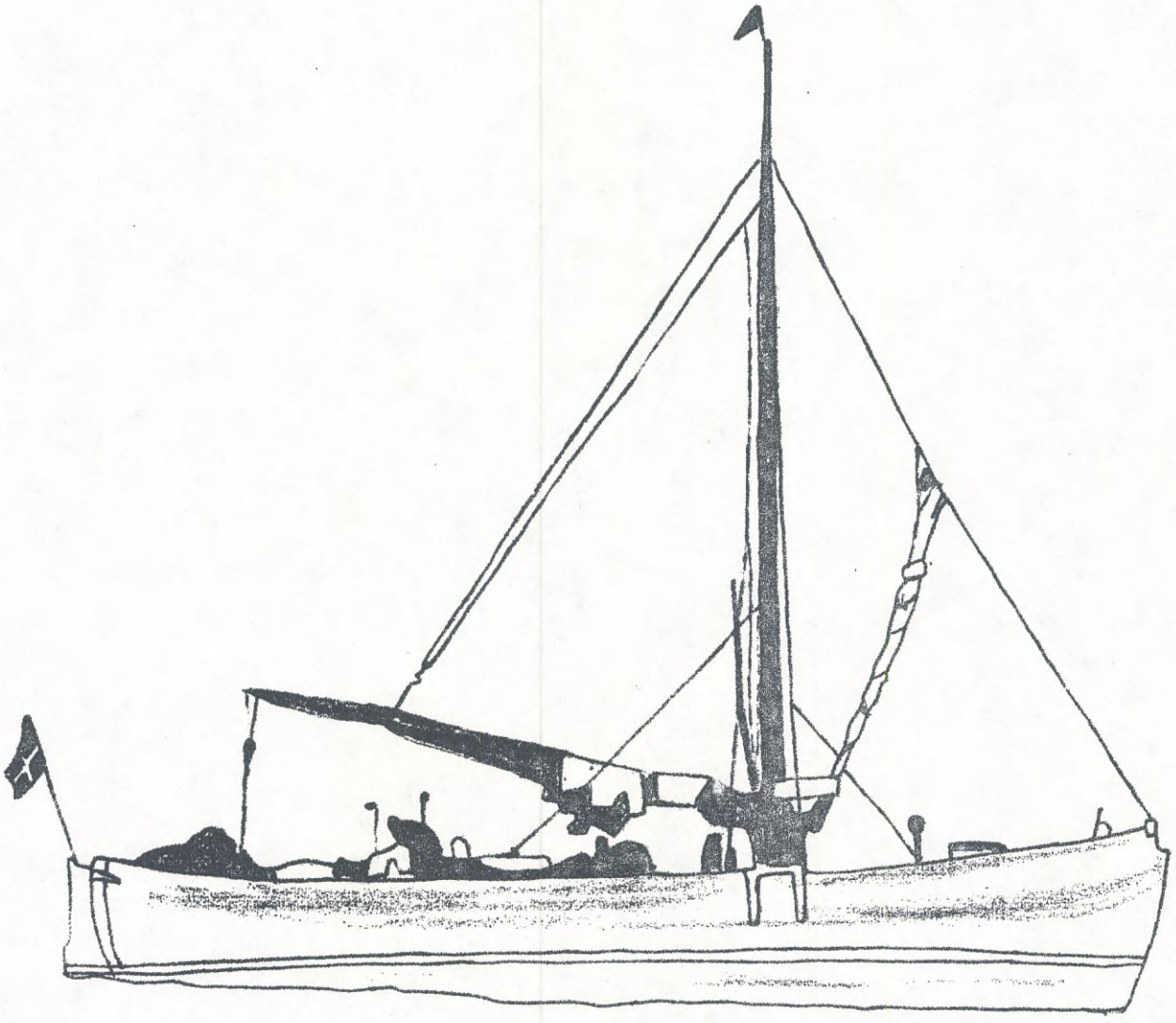
At first a boat was hired from fishermen at Barsebäckhamn, where a closed-down school building was converted into a rather primitive laboratory in which a large material of bottom fauna was also processed. From and including the year 1914, a specially-built vessel, the Sven Nilsson, was used.

In 1918 my dubies were extended to include the study of the nutritional biology of the fish fry (contents of stomach and intestines), with the purpose of augmenting my licentiate paper to make a doctoral thesis. After I had been awarded a stipendiary in the fisheries section of the Board of Agriculture in 1921, I was enabled to continue my studies with the help of the investigation vessel Eystrasalt, and extend them to the Baltic Sea. Lack of time made it impossible for me to collect my material for a doctoral thesis. When i returned to my material some years later, I considered it justifiable to report my findings in table form for the fry of each species of fish, and also as summarizing tables showing the catches in various regions at different times. As far as the comments are concerned, I must refer to the usually brief ones given for each fish species, in rather greater detail for herring and cod fry. Number, stomach (and intestines) contents, catching stations, time, catch depth, etc., are given when information is given in the primary report. Altogether, the larvae of rather more than 50 different species were studied, partly also of the earlier material which has been kept preserved.

The occurrence of decapod larvae in the Sound is reported in appendix 48, mainly from the late autumn of 1916, the season when the number and frequency of the species was greatest. Appendix 49 gives the hydrographical data when samples of fish fry, etc., were taken.

STATIONS OCCUPIED FOR CATCHING FISHLARVAE 1912-1926, MOSTLY WITH "SCHERBRUTNETZ"





Research vessel "Eystrasalt".
Drawing from a photo taken in the year 1926.

Abbreviations

dom	dominating
CC	very abundant
C	abundant
H	less abundant
+	few
r	single
ad	adult
j	juvenile and young stages
Stat - st.	station
ser	hydrographic series
●	observations are made
⊙	observations in the journal

Gear

SB	"Scherbrutnetz"
Rh	Big ring net (egg net)
tr	trawl
ytr	larval trawl (incl. Östergrens trawl)

Animals

cop	copepoda
cop r	remnants of copepoda
cpd	copepodit
cpd r	remnants of copepodits
npl	nauplii
clad	cladocera
amph	amphipods
gamm	gammarids
isop	isopods
ostrac	ostracods
dipt	imagines of diptera
dipt l	larva of diptera
insect	imagines of insects
chir	chironomids, larvae & pupae
cil	ciliats
rot	rotatoria
polych.	polychaets

Index of species and abbreviations

Ciliata: Tintinnidae — Cil.

Ctenophora: Pleurobrachia pileus (the only species in the Baltic) S minimum 6,5 °/oo

Rotatoria: Synchaeta baltica, " monopus } CC in the Baltic — Synch.

Polychaeta: (Many times remnants and chaetae in the stomach contents) — Polych

Common species also in the Baltic

Harmothoe sarsii
Nereis diversicolor (most common species in stomach contents)
Pygospio elegans
Terebellides stroemi

Amphipoda: several species. Dulichia etc. — Amph.
In the Baltic: Hyperia galba in the southern part
Pontopoeia affinis, " femorata } mostly small individuals in netsamples close to the bottom — Pont

Decapoda: Carcinas maenas
Crangon crangon northwards to Stockholm
Leander fabricii northwards to Åland

Cumacea:
Diastylus rathkeii (common even in the Baltic)
Eudorella sp.
Leucon sp.

Isopoda:
Idothea baltica, " viridis — Idoth.
Jaera marina — Jaera
Heterotanais örstedi common on Zost. bottoms

Mysidacea: — Mysis
M. mixta northwards to the Kvark
M. relicta
Praunus flexuosus, " inermis } mostly in the litoral on bottoms with algae and Zostera
Neomysis vulgaris cc in the litoral, all over the Baltic

Copepoda: — Cop.
A. Common species, even in stomach contents of fish larvae

Acartia bifilosa, " longiremis cc (dom) - mostly — Acart
Calanus finmarchicus + in the Sound down to Ven — Cal.
Centropages hamatus, C — Centrop.
Eurytemora hirundoides — Euryt.
Oithona similis — Oith.
Paracalanus parvus — Parac.
Pseudocalanus elongatus — Psc.
Temora longicornis — Tem.

B. Rare species in the Sound

Candacia armata	1922-12-09	St. 46
Labidocerca wellastoni ♀	"	"
Metridia lucens (several ex.)	1923-12-09	
Centropages typicus	"	
Chiridius armatus ♀ (in Cyclog. liparis)	1914-07-03	St. 42

Copepoda in the Baltic 1925-1926 Own material

Acartia bifilosa	CC		Acart.
" longiremis	H		"
Centropages hamatus	C		Centrop
Cyclops spp.	H		Cyclops
Eurytemora hirundoides	C		Euryt
Oithona similis	C	(in the southern Baltic)	Oith
Pseudocalanus elongatus	C	(in deeper layers)	Psc
Temora longicornis	C		Tem

Harpacticida: : Mostly in the form of remnants in the stomach contents. As a rule only recorded as a group.

Common genus:
Ectinosoma
Idya
Harpacticus
Laophonte

Other species:
Amphiascus, Canthocamptus
Dactylopusia
Mesochra
Nitochra
Normanella
Porcellidium
Thachidius
Thalestris

Cladocera:			Clad.
Bosmina maritima	C	in the Baltic + Southern Sound	Bosm
Evadne nordmani	C	also in the Baltic	Evad
" spinifera	r	during June-July in the Sound	
Podon intermedius	H	in the Baltic & the Sound	Pod.
" leuckarti	+	in the Sound	

Ostracoda: only recorded as a group — Ostrac

Diptera- imagines — Dipt.

Diptera- larvae — Dipt. l.

Insects- imagines — Insect

Chironomids, larvae and pupae — Chir.

Gastropod larvae: Hydrobia etc — Gastr. l.

Lamellibranchiata- larvae: — Lamm. l.
Mytilus: ad and l. Mya arenaria,
Cardium spp, Macoma etc

Copelata:
Oikopleura, Fritillaria } also in the southern and the central Baltic

Addendum: Sample: 1922-12-17 off Ven

Pleurobrachia, size 12-13 mm, feeding organisms:

1. Cirriped larva (Ostracod - stage)
2. Shells of copepoda (spermatophora not digested)
3. + Podon sp.
4. Trematod , parasitic
5. 3 Centropages hamatus
6. 2 Pseudoc. elongat.
7. several shells of copepoda
8. 2 trematod, parasitic
9. 1 gastrop. larva
10. Remnants of copepod nauplii
11. Shells of Podon. - Melosira cells + chaetae

Pleurobrachia, sometimes occuring in great quantities can thus be considered as a competitor of food to fish larvae. The same is true - but not to the same extent - for Sagitta.

Phytoplankton

Common or characteristic species in the Sound.

Diatoms: November - March 1921 - 1924

Biddulphia aurita - C	Bidd
Chaetoceras boreale - CC	Chaet
" diadema, decipiens, + - H	
Coscinodiscus concinnus + spp - C	Cosc
Leptocylindrus sp +	
Paralia sulcata +	
Rhizosolenia alata +	
Sceletonema costatum	
Thalassiosira sp. C	
Thalassiothrix sp. +	

Other algae

Aphanizomenon +	Aphaniz
Nodularia spumigenia	Nodul
Ceratium tripos - C	Cerat
" longipes, fusus, furca H - +	
Gonyaulax catenata	
Peridinium spp	Perid

Baltic formes acc. to own published material

Diatoms

Achnanthes taeniata, winter form
Bacillaria paradoxa, in the archipelago, May - June
Chaetoceras boreale, C in the southern Baltic
" danicum, CC whole year
" decipiens, H in the southern Baltic
" wighami, C in the archipelago
Diatoma elongat, v. tenue, C in the archipelago, spring
Coscinodiscus concinnus + sp C
Melosira hyperborea, winter form
" jürgensi + borreri, C during the spring
Sceletonema costatum, C during early spring
Thalassiosira baltica - C during spring

Other algae

Anabaena baltica H in the archipelago, May - Sept.
Aphanizomenon, domin. species, summer - autumn Aphaniz.
Nodularia spumigenia - C Nodul.

Dinobryon pellucidum H, early spring
Ceratium tripos + spp Cerat
Gonyaulax catenata +, spring

Dinophycis spp. - 3 species in the Baltic

Algae may be found in the stomach and intestine of fish larvae, mostly in herring and sand eels.

In the Sound mostly diamoms in the Baltic preferably threads of Aphanizomenon.

Year date	No	Station	Number	mm	Ctenolabrus rupestris	Gear ca. depth	Ser.
					The Sound Pelagic larvae		
1914							
07	36-40	NE Ven	34	6-9	Stomach content not investigated	SB	-
1916							
07-26	52	W Kullen	1	10	Cop: 7 Parac	- 25m	
08-24	34	E H-k	1	6	npl: 2 Oith. 1 Acart. + sp	- 10m	•
			1	6	npl: partly Oith.		
			1	6	npl: 1 Tem; diat. 1 Coscinodiscus sp.		
			1	7	npl: Tem, Oith, Psc		
			1	7	cpd; npl: partly Oith; diat: 1 Cosc.		
			2	7	cpd; npl.		
			1	8	cop: 1 Tem, 1 Oith		
			1	8	cop: 1 Oith, 1 Psc		
			1	8	cpd; npl: Acart, Oith.		
			1	8	npl: Tem, Psc		
			1	8	npl: Acart, Oith, Psc.		
			1	9	cop: 2 Oith, 4 Psc; clad: 2 Bosm; cpd.		
			1	9	cop: 2 Oith, 1 Parac.		
			1	10	cpd; npl; alg: 2 Cerat tripos		
			1	10	cop: 1 Psc, 1 Tem		
			1	10	cop: 1 Psc, 1 Parac.		
			1	10	cop: 1 Tem + remnants, cpd: remnant		
1917							
07-13	34	E H-k	1	8	cop: 1 Tem, 2 Euryt; npl. +		•
07-14	34	E H-k	1	9	cop: 1 Tem-j + remnants; npl +	- 18m	• 07-13
1924							
08-21	34	E H-k	1	6	naupl: partly Oith, Psc	SB	-
08-27	48	Öretvisten	1	7	cop: 2 Acart-j, 1 Oith.	SB	-

Year date	No	Station	Number	mm	Labrus rupestris	Gear ca. depth	Ser.
					Older stages		
1922							
11-03		Landskrona	1	18	harpact: partly Idya sp. Isop: j; algae	larval trawl -	
		Sand- and	1	22	cop: 1 Eurytemora; harpact: C Cyclopina and others		
		Zostera b.	1	40	gamm; j + remnants; isop: Iaera marina	depth about 6m	
			1	42	" " + " ; " " "		
1924							
07-03			1	40	Cop: 3 Calanid. sp. harpact: partly Idya, 3 Ascomyzon	trawl	
			1	42	Gamm - fragments; harpact		

Occurrence: Skagerrak, Kattegat, the Sound; southern Baltic

Spawning: May - July

Own material: pelagic larvae only during July-August
eggs: noted only 1917-07-14 - 12 eggs caught on 18m depth

Year date	No	Station	Number	mm	Gobius niger	Gear time, ca.depth	Ser.
					The Sound Pelagic larvae		
1916							
07-17	28	Borstah.	2	6	cop: 1 Acart; npl: Oith, Psc	SB 15 min -	• 07-19
		outer	2	7	cop: 1 Acart; cpd; npl: Acart, Oith, Psc, Tem	- 13 m	
07-26	34	E H-k	2	5-6	npl: Acart, Oith, Psc, Tem	30 min - 25 m	-
08-05	29	Borstah.	1	8	cpd-r; npl: Oith, 1 Tem	30 min - 20 m	-
1917							
07-13	34	E H-k	3	6-7	cop: 1 Oith; npl: Acart, Oith, Psc	30 min - 5 och	•
			1	10	cop: 1 Oith; npl: Acart, Oith, Psc	15 m	
1925							
08-20	25	Off Valagr.	1	6	npl: Acart, Psc + sp	-	-
					The Sound, older stages		
1917							
07-08		Barsebäck	1	44	Gamm: r; Iaera; Idothea j	hand net	
07-23		Gräsrännan	1	61	Gamm, r; harpact; Iaera; Polych, r		
					The Baltic, older stages		
1923							
05-23		Karlskrona archipelago, Aspö	1	44	2 Corophium: Nereis remnants - c		
			2	52-53	Iaera - c, Corophium (grossipes)		
			3	62-64	2 Corophium; Nereis remnants, 1 Chironom.		
			2	71-74	Corophium, Iaera, Idothea, Nereis - r.		

Occurrence: Bohuslän - the Sound; in the Baltic up to Stockholm archipelago
Spawning: May - July
Own material: The largest of our Gobius species, max ca 15 cm

Year date	No	Station	Number	mm	Pomatoschistus pictus pictus	Gear time, ca. depth	Ser.
					The Sound Pelagic larvae		
1916							
07-26	52a	Off Mölle	1	4	Empty	SB 30 min	
			1	5	naupli:2 Oith.	- 25m	
1924							
08-21		NE Ven	1	5	naupl: 2 Psc.	SB	
					Older stages		
1911							
09-05	36	W Ven	1	45	harpact - c + remnants		0
1914							
07-14	38	NW Ven	2	32	harpact: 1 Spionid: Polydora ?, 1 halicarid	Trawl	0
			1	36	harpact - c, Halicarida; diat, benthic forms		
			1	38	1 spionid. diat: benthic forms, sand		
			1	44	2 harpact, 1 halicarid, spionid-r, sand		
07-04	36	W Ven	1	36	harpact; halicarida.	Trawl	0

Occurrence: Bohuslän - the northern Sound

Spawning: June - August

Own material: pelagic larvae: 3 ex. only of this rare small species have been caught in the northern and southern Sound under July - August; length max. ca 5 cm
older stages; 32-44 mm, have been found in samples with a small larval trawl on 2 stat. W and NW of Ven on 15m sand bottom and 18m clay in the years 1911 and 1914 (R/V "Sven Nilsson"). Later on I have not found any bottom stages in the Sound.

Year date	No	Station	Number	mm	Pomatoschistus minutus	Gear time, ca. depth	Ser.
1916							
07-17	28	E Ven	1	8	cpd; npl. Acart, Oith	SB 20 min - 15 m	●
		"Staffansbank	1	8	npl; 1 Acart.		
			1	10	cop: 1 Acart. longiremis		
			1	11	cop: 2 Acart + cop. restes		
07-26	29	SE Ven	3	4	cpd; npl:2 Acart, 3 Oith, 1 Tem; diat:	30 min - 28 m	●
			4	5	npl: Acart + Oith c, 3 Psc; 1 Peridin. sp		
			5	6	cop: 1 Acart, + Oith, 1 Psc; cpd-r, npl; diat: 1 Cose.		
			2	7	cop: 2 Acart, 1 Oith, 1 Parac; cpd-r, npl:Tem,Psc		
			1	8	cop: 1 Parac, 1 Oith		
			2	9	cop: 2 Oith, 1 Psc; cpd-r, npl:Psc, Centrop		
			2	10	cop: 1 Oith, 2 Parac, 1 Psc; cpd:restes		
08-05	29	"	1	6	cpd-r; Oith, Psc		
			3	7	cop:3 Acart, 1 Oith, 2 Psc; npl: Acart, Oith,Psc	- 20 m	
			1	9	cop: 1 Acart, 2 Psc		
09-30	34	NE Ven	1	9	cpd:r; npl: partly Psc	- 10 m	
1917							
07-13	34	"	2	6	npl: partly Oith	- 15 m	
			1	8	cop: 2 Psc-j; cpd:r		
			2	7	cop: 1 Acart, Psc	- 15 m	
1922							
08-14	25	W Valagrund	2	7	npl: Oith, Psc?	-	●

Year date	No	Station	Number	mm	Pomatoschistus minutus	Gear time, ca. depth	Ser.
1924					The Sound. Pelagic larvae		
08-21	34	NE Ven	1	5	cpd:r-partly Acart		
			1	6	cop:Acart-j, Psc-j		
			3	8	cop: " , "		
					The Sound. Older stages		
1922							
09-20	39	SW Råå	2	25-28	cop: Tem, Harpact	Danish seine on 18 m	
			2	35-39	harpact: Podalirius, Eudorella;Polych:rest.		
			3	40-50	amphip: restes; polych:r; Dulichia		
			3	58-65	Dulichia, Eudorella; Polych: restes		
10-03	41	NW Ven	2	22-29	harpact: Laoph, Eudor. Polych:restes	larval trawl on 15 m	
			2	38-39	amphip: restes; harpact; Polych: restes		
			6	45-48	harpact:Polych restes		
					The Baltic. Older stages		
			3	33-39	Iaera marina; small chironomidae		
			2	41-42	" " ; Corophium; Mysis-r		
			2	46-50	" " ; " ; " "		

Occurrence: Bohuslän-the Sound; the Baltic-the Bay of Bothnia

Spawning: April-August

Own material: The main part of small pelagic larvae - 4-5 mm were found at the end of July, indicating that the time of June to the first half of July is the most intensive spawningtime in the Sound (year 1916).

Year date	No	Station	Number	mm	Pomatoschistus microps	Gear time, ca. depth	Ser.
1916							
07-27	28	Borstahus y.	2	7	cpd.r;partly Oith, Psc	5.B - 30 min.	
			1	9	cop: 2 Parac.	- 20 m	
1917							
07-06		Barsebäck:	13	6-7	cop:Acart. and Eyryt. - restes npl: partly Acart rot:23 Brachionus in one example; Notholca sp	hand net & plankton net	
		XX)	9	8-9	cop:Acart + restes, 4 Parac; cpd.r; npl:+ rot:Brachion.~~11~~, clad: Evadne +; alger[x]		
			30	10-11	cop:Acart bifilosa, 2 Euryt, Centrop. Clad: 2 Podon, Evad. cpd; harpact; rot: Brachion; alger: X)		
			10	12-15	copAcart, Parac, Euryt, Centrop; harpact; clad: Podon, Evad rot: Brachionus		
1924							
08-21			1	7	naupl: partly Psc		
					The Sound, older stages		
1917							
07-23		Barsebäck	5	16-17	cop: Acart, Parac, Euryt, harpact polych-remnants, chironomidae		
			3	20-21	harpact-c; Nereis-remnants, astrac,	hand net	
			2	25	harpact-r; Nereis-remnants, chiron,		
			2	30, 32	15 Corophium grossipes, Gamm-j		
			1	40	14 " "		
1922							
05-03		Lundåkrabukten	1	14	cop: Acart, Tem		
			1	21	cop: Acart, Tem-c, Centrop; Bosm		
			1	24	cop: " " -c, Euryt; Bosm		
			2	28	cop: " " -c, Centrop; Bosm, Pod		
			2	30, 31	cop: " " -c, ; Bosm, Pod, Evad		
			1	34	cop: " , " ; Bosm, " , "		

x) algae in the stomach: peridineer, Meiomopedia, Oscillat; naviculaceer
xx) abt 500 ex caught, 6-15 mm

Year date	No	Station	Number	mm	Pomatoschistus microps	Gear ca. depth	Ser.
					The Baltic, Older stages		
1922							
09-06		N Småland archipelago	1	19	cop: Acart, Euryt; clad: Podon	Larval trawl	
			1	21	cop: " , " ; harpact; 1 Mysis-j		
			1	21	cop: " , ; harpact: partly Mesochra		
			1	22	cop: " , " ; harpact: clad: Bosm, Evad		
			1	22	cop: " , " clad: Podon		
			1	23	cop: " , " ; harpact: clad: Evad		
			1	24	Mysis-remnants		
			1	25	2 Mysis-j		
			1	25	cop: Acart, Euryt; harpact: 1 Gamm-j		
			1	25	cop: 1 Euryt; harpact-c;		
			1	27	2 Gamm-j		
			1	31	4 " "; harpact; 2 Ostrac		
			1	31	3 " ";		
1923							
05-23		Karlskrona	1	40	2 Corophium grossipes	hand net	
			1	41	2 Corophium grossipes; 1 Iaera marina		

Occurrence: Bohuslän - the Sound; the Baltic up to Stockholm archipelago

Spawning: May - August

Together with Pomatoschistus minutus and Gobiusculus flavescenes = the three common species in the Sound and southern Baltic.

In May 1922 Bosmina was dominating in the stomach content in samples from Lundåkrabukten.

Year date	No	Station	Number	mm	Gobiusculus flavescene	Gear, time - ca depth	Ser.
					The Sound Pelagic larvae		
1916							
07-17	28	E Ven	1	6	cpd; npl: 1 Psc	SB	
		"Staffans, b"	1	6	cop: 1 Acart-j; npl: Acart, Oith	30 min - 13m	● 07-19
07-26	34	E H-k	7	7-8	cop: Psc.j, Parac; npl; cpd:r	30 min - 28m	o
			8	9-10	cop: 1 Acart, 3 Parac; npl; diat: 1 Cosc.		
08-05	29	SE Ven	4	5	cpd.r; npl: Acart, Psc, Oith	30 min - 20m	-
			6	7-8	cop: 1 Acart, 4 Parac, 1 Psc-j		
			4	9-10	cop: 5 Parac, 1 Tem-j; cpd-r, npl-		
1917							
07-13	34	NE Ven	3	8-10	cop: 1 Acart+remnants, Pasac-remnants; cpd; npl;	- 7m	●
1922							
08-14	25	W Vala	1	6	npl: +		
			2	8-9	cop: 2 Parac; cpd-r; npl: partly Oith	- 15m	
1924							
08-21	34	NE Ven	1	6	cop: 1 Parac; npl: partly Oith.	-	●
			1	6	cop: 1 Acart.j: npl +; dist: 1 Guinardia		
			3	6	cpd.r; npl: partly Oith, Psc		
			5	7	cop: 2 Acart, 1 Tem-j. npl: Tem, Oith, Psc		
			8	8	cop: 1 Acart, Parac, 2 Psc, 1 Tem.j; cpd npl: partly Oith		
			3	9	cop: Parac-remnants		
			2	11	cop: Acart, Oith, Psc, Tem; cpd:remnant		
1925							
08-20	-	E Ven	1	6	cpd: -2; npl: 6, partly Acart, Oith	-	-
			3	7	cpd: 2 Acart + remnants, npl: Acart, Oith, Psc		

Year date	No	Station	Number	mm	Gobiusculus flavescenes	Gear
					The Sound Older stages	
1922						
10-03		Lundåkrabukten	5	18-21	Cop: Acart. Tem, Euryt, Centrop. clad: Bosmina, Podon	Larval trawl 4-8m
			5	22-28	cop: Acart, Tem, Controp; cpd; clad: Bosm. Pod.	
			3	30-36	cop: " , " , " ; " ; clad: Bosm. Evad. Pod.	
			5	42-45	cop: " , " , " ; " ; clad: Bosm. " , "	
1923						
05-05		Ven, Hamnen i Husvik	2	30, 38	cop: Acart, Tem; harpact; 1 Chironomid	Shafted net on 2m depth
			2	40, 41	cop: Acart, Parac; harpact: Ectinosoma + spp.	
			6	43-45	cop: Acart, Parac + cop. remnants; harpact, Mysis-remnants; ostracoder	
08-12		Landskrona	1	25	cop: Acart, Euryt; harpact (most Tachidias) cop-egg-c.	
					The Baltic Older stages	
1922					Acartia bifilosa domin. the stomach content in 8 ex.	
09-06		N Kalmarsund archipelago	3	24-26	cop: Acart, Euryt, Tem; clad: Bosm, Evad, Pod.	Shafted net
			2	28-29	cop: Acart, " " ; clad: " " "	
			3	32-33	cop: Acart, " " ; clad: " " "	

Occurrence: Bohuslän - the Baltic - Bay of Bothnia

Spawning: April - August; according to own material mostly spawning about 1 Aug. in the Sound

Own material: Dominating species of fish in the sample from Lundåkrabukten in Okt. 1922 with more than 500 ex Zostera and algal vegetation with mass production of Bosmina have obviously been a favourable feeding milien.

Year date	No	Station	Number	mm	Aphia minuta	Gear, time, ca. depth	Ser.
1916							
11-07	34	E H-k	1	11	cop: 1 Parac, 1 Centop. j	SB 13m	-
1922							
09-22	39	SW Råå	1	45	cop: 3 Calan. finmarchicus. ♀ with clearly indicated eggs in the ovarium	Danish seine	●
1924							
08-21	34	E H-k	1	10	cop: Acart, Parac. cpd	SB	
			1	12	cop: Parac, Psc + remnants		

Occurrence: This littlespecies ♀-max 5 cm, ♂ - 6 cm is known from Skagerrak, Kattegat down to the northern Sound.

Spawning: June - July

Own material: Pelagic larvae reletively big, 10 - 12 mm, which points to transport into the Sound with water from Kattegat

Lebetus scorpioides

1916							
08-15	25	W Valagr.	1	4	8 npl: Acart, Oith, Psc	15 min 13m	●
09-23	34	E H-k	1	4	4 npl: Oith, Psc; cpdr: partly Acart	" "	
1917							
08-18	34	E H-k	1	7	cop: 1 Tem. j, cpd-r.	45 min 8-13m	
1924							
08-27	48	Öretvisten	1	5.5	cpd. and npl		
			1	6.5	cop: 1 Parac; cpd and npl. - several species		

Occurrence: The smallest of the Gobiids, ad.= 4 cm. A few in Kattegat.

Year date	No	Station	Number	mm	Myoxocephalus scorpius scorpius	Gear, ca. depth	Ser.
					Pelagic larvae The Sound		
1916							
04-16	34	NE Husvik	1	7	Empty, yolk sack not resorbed.	SB 20m	-
1922							
10-03	25	W Valagr.	2	8.5	cop: 1 Acart; yolk sack not completely resorbed	-	●
			1	9	Empty " " " " "		
			1	10	cop: 2 Tem. j, 1 Psc, + remnants		
			1	12	cop: 3 Temora		
			1	13	cop: 8 Tem		
			1	13	cop: 4 Tem, 1 Centrop. hamatus		
1923							
03-18	34	NE Husvik	2	8	Empty. Yolk sack not resorbed.	6m	●
			1	8.5	cop: 1 Acart, yolk sack not completely resorbed		
			1	9	Empty		
			1	10	cop: 2 Tem, 1 Psc. j + remnants		
			1	13	cop: 7 Tem.		
03-18	34	NE Husvik	3	8	Empty. Yolk sack not resorbed	8m	●
			1	8.5	cop: remnants, yolk sack not completely resorbed		
			1	12.5	cop: 3 Temora		
			1	13	cop: 7 Temora		
			1	13	cop: 4 Tem, 1 Centopag.		
			1	13	cop: 6 Tem		

Year date	No	Station	Number	mm	Myoxocephalus scorpius scorpius	Gear, ca. depth	Ser.
					Older stages		
1915							
07-14	25	W Valagr.	1	48	remnants of Gamm., 1 Mytilus. j.	-	-
			1	60	stomach content not investigated		
1924							
10-20		Kalmarsund	1	22	Gamm.-juv; remnants of Mysis	Larval trawl on 10 m Bottom with red algae	0
			1	26	Gammarider + remnants		

Occurrence: Skagerrak, Kattegat, the Sound - the Baltic

Spawning: December - February

Own material: Pelagic larvae: Oktober - April; yolk sack resorbed from 10 mm onwards

Year date	No	Station	Number	mm	Myoxocephalus quadricornis	Gear, ca. depth
					Pelagic fry	
1926						
05-07		Gamlebyviken	2	12	Yolk sack not resorbed. Intestine emty	Egg net 50-0 m
			1	13		
1927		The Bothnian sea and N Baltic				SB
06-04		Off Sundsvall	3	12-13	Yolk sack not resorbed. Intestine emty	- 75m
"		"	2	"	" " " " " "	- 75m
06-08		Off Svartvik	1	"	" " " " " "	More in surface
06-15		E Gotska sandön	1	"	" " " " " "	- 35m

Occurrence: In the Baltic: mostly in deep archipelago bays. In the Bothnian Sea - the Bay of Bothnia

Spawning: During the winter

Own material: Pelagic larvae - 3 ex in Gamlebyviken on 5 May 1926
6 ex in the Bothnian Sea on 4 to 8 June 1927 - abt a month later.
Inspite of the small material there is an indication for hatching in May. Yolk sack not resorbed and intestine emty. Larvae starting feeding have thus not been cought with egg nets. This apparently indicates that the larvae seek food animals on the bottom when the yolk sack has been resorbed.

Year date	No	Station	Number	mm	Agonus cataphractus	Gear depth	Ser
					The Sound Pelagic larvae		
1916							
04-16	25	W Valagr.	4	7-12	Stomachs not examined	SB	-
04-20	34	E Ven	1	8	diat: Thalassiosira c;1 Distephanus	SB	-
			1	10	cop: 1 Psc, cop.egg. diat: Thalassiosira		
			1	10	cop-remnants most Psc; cop-egg		
			1	11	cop: 1 Psc		
					Older stages		
1909							
June		The Sound	1	18	cop: 1 Psc, 1 Tem; clad: abt 20 Podon Evadne H; alg: Cerat. tripos H	-	-
1922							
10-18		Off Råå	1	40	Gamm-remnants, Podalinius; Polych.-remnants diat: naviculacae , Synedra and others	Larval trawl 18m	

Occurrence: Skagerrak, Kattegat, the Sound; the Baltic: the southcoast of Skåne

Spawning: January - April

Own material: Pelagic larvae - April. Even diatoms in the stomach content older stages. - 40 mm in Okt.

					Taurulus bubalis		
1923							
05-04	42	Off Råa	1	5.5	npl: 10 ex. Psc + Tem	SB - 10m	• 05-03

Occurrence: Skagerrak, Kattegat, the Sound - the Baltic up to Stockholm archipelago

Spawning: March - April

Year date	No	Station	Number	mm	Cyclopterus lumpus	Gear ca. depth	Ser.
					Pelagic stages		
1914							
07-03	35	N Ven	1	7	yolk sack hardly resorbed	Larval trawl	-
				7	" " partly " ;diat:4 Chaeto c. cells, 2 Thalssiothrix		
1915							
07-20	2	S. Öres.	1	8	cop: remnants; cyclopidae	"	-
			1	10	" : " " harpact. c remnants		
			1	11	cop: remnants: Euryt, cyclopidae		
			1	16	cop: Psc H, Tem		
1923							
05-04	42	Öretvisten	1	11	1 Gamm. juv; harpact: Ectinosoma and others	SB - 5m	• 05-03
					Older stages		
1914							
07-03	14		1	30	Gamm-j, Idothea sp	Larval trawl	-
07-06	18-20		1	42	Gamm: most g. locusta, 1 Sphaeroma rugicauda, 2 Idothea viridis	"	-
			1	51	Gamm-remnants; 4 Idothea viridis, 1 I. baltica, Isop: Jaera remnants		
1915							
07-20	2	S. Öres.	1	26	Gamm. remnants, Harpact: Cyclopina and others	"	-
					Southern Baltic		
-	-	-	1	21	Gammarider. j. H; harpact: CC	-	-
			2	24-25	" " " " "		

Occurrence: Skagerrak, Kattegat, the Sound, the Baltic - up to the Bothnian Bay

Spawning: March - April Own material: Pelagic larvae in May and July (?)

Year date	No	Station	Number	mm	Liparis liparis	Gear time, ca.depth	Ser.
					The Sound Pelagic larvae		
1914							
07-03	40	N Ven	2	8-9	cop: 2 Psc-j + remnants; cpd; npl: most Psc	-	-
1922							
05-06	34	E H-k	1	6	cpd.r; npl: partly Acart; diat: Sceletonema	20 min - 18m	•
			2	8	cop: 1 Acart. longir; cpd.r; npl: Oith, Psc, Centrop		
			1	10	cop: 2 Tem; cpd.r, diat: Chaet. boreale-cell		
05-08	25	Off Valagr.	2	9-10	cop: 1 Parac, 1 Psc; npl: Acart, Oith, Psc	- 20m	•
1923							
03-18	33	E H-k	1	6	yolk sack not completely resorbed	10 min - 12m	•
05-04	35	E H-k	4	6	npl: 2 Acart, 8 Oith, 1 Psc	10 min - 12m	• 05-05
			2	8	cop: 1 Tem, Psc-remnants; cpd; clad: 1 Podon		
			3	9-10	cop: 3 Tem, parts of Parac, Tem, Psc; cop.egg-c cpd.r; npl: 1 Tem.		
1924							
07-27			1	9	cop: 2 Tem, 3 Psc; npl: 1 Psc	-	-
					The Sound Older stages		
1913							
10-16	52	Off Kullen	2	25, 35	amph: Dulichia H, 5 Melita ?; insectimag-remnants	Larval trawl	-
1914							
07-03	42	Off Råå	1	22	amph: Dulich. H; Euphasiacae, cop: 1 Chirid. armat	"	-
			1	30	" " ; Mysis-remnants		
07-04	42	" "	1	15	harpact: Ectinos., Cyclopina and others Ostracoda	"	-

Year date	No	Station	Number	mm	Liparis liparis	Gear time, ca.depth	Ser.
1915							
06-26	52	Off Kullen	1	28	harpact. abundant (about 100): Ectinos., Laoph., Idya and others	Larval trawl	-
08-16	"	" "	1	20	harpact. abundant: Ectinos., Laoph., Idya and others	"	-
					The Baltic Pelagic larvae		
1922							
05-12		Off Trelleborg	1	7	npl: Acart, Tem	SB 20 min - 5m	
"		Off Smyge	2	7	cpd: Acart; npl: Acart, Oith, Tem	20 min - 40m	
05-13		W Bornholm	2	9-10	cop: 1 Acart, 2 Centrop; 2 cpd	- ca 50m	
05-14		S Hanö	3	5	yolk sack not resorbed; alg: 1 Aphaniz.-thread	- ca 35m	
			4	7	naupl: Acart, Tem; diat: 1 Cosc. " " " " ;		
05-14		S Hanö	11	6	yolk sack not resorbed. Intestine emty	20 min - 17m	
			3	6	npl: 1 Acart; alg: Aphanizon.-H		
			6	6	npl: mainly Acart, 1 Centrop; cpd-remnants +		
			3	7	cop: 1 Tem.j; 7 npl		
			2	8	cop: 3 Acart. bifilosa, 1 Tem + cop. remnants		
05-16		W Hanö	5	6	yolk sack not compl. resorb. npl:1 Acart;Aphaniz + only Aphaniz. threads - H	40 min - 14+28m	
			5	7-8			
			2	7-8	naupl: 8 ex. - Acart, Tem, Centrop		
05-17		S Utklippan	35	6-9		- 15m	
05-20		N Öland	1	7	naupl: Acart, alg: Aphaniz.	- 35m	
1923							
05-15		-	5	5-6	yolk sack not resorbed. Intestine emty	-	
1926							
08-02	E	E Gotland	1	8	cop: 1 Psc.-j; npl H	haul at 50 and 100 m	
			1	10	cop: Psc.-remnants from ad. and j.		
			1	12	cop: 1 Limnoc. skeleton, Psc-remnants		

Occurrence: West coast, The Sound - Baltic - Bay of Bothnia

Spawning: February - April

Own material: pelagic larvae: 5-6 mm, majority with york sack not resorbed or incompletely resorbed
6-10 mm, the Sound, many with diatoms in the stomach
5-7 mm, the Baltic, many with Aphaniz, in the stomach.

Appendix 16

Year date	No	Station	Number	mm	Liparis montagui	Gear time, ca. depth	Ser.
					The Sound Pelagic larvae		
1922 05-06	34	E Ven	1	8	cop: 2 Parac; cpd; Acart, Psc, Tem	SB 20 min - 18m	●
1923 05-04	40	E Råå	2	4	cpd.r; npl: Oith, Psc, Tem; 1 Balanus-naupl.	- ca 10m	● 05-05
			2	5	cpd.r; npl: Oith, Psc, Tem		
			1	9	cop: 1 Parac, Psc-parts; cpd.r; diat: Chaetoc. aller		
					The Sound Older stages		
1922 12-17	34	E Ven	1	45	x)	Trawl	●

x) was found when trawling on a Mytilus bank at 2-5 m depth off Husvik harbour

Occurrence: The West coast down to the Sound - relatively rare.

Spawning: February - April

Own material: Pelagic larvae were caught at the beginning of May.

Year date	No	Station	Number	mm	Callionymus lyra	Gear time ca.depth	Ser.
1916							
08-24	34	E Ven	3	3	cpd.r; npl: Oith, Tem.	SB 30 min - 18m	• 08-23
08-24	"	"	4	3	npl: Oith, Psc. cpd-r	20 min - 18m	• "
			9	4	cpd: Acart, Oith, Psc; npl: abundant Oith, Psc and others		
			4	5	cop: Acart, Parac-c, Psc; cpd.r, npl: single alg: Cerat, tripos		
			2	6	cop: Psc, Tem; cpd H, alg: Cerat. tripos		
			1	7	cop: 3 Psc, 1 Centrop. cpd; dist: Cose sp		
09-30	42	N Ven	1	9	cop: 1 Oith, 2 Parac, 1 Psc	- 10m	-
1917							
08-18	42	"	1	5	cpd.r; npl: partly Oith		
			1	8	cop: Acart longer., Tem, Psc: cpd, npl: Oith, Tem	- 13m	-
1921							
08-18	34	E H-k	1	8	cop: Acart, Tem, Psc; cpd, npl:r	20 min -	•
1922							
08-14	"	"	1	5	cpd-r; npl: partly Tem	20 min	• 08-15
10-03	25	S Ven	1	6	npl: 2 Psc	- 10m	-
1925							
08-20	34	E H-k	1	6	cop: 3 Psc, L Tem; cpd:r	20 min	-

Occurrence: Skagerrak, Kattegat, the Sound:

Spawning: April - July

Own material: Egg: 8 in Aug., 11 in Nov., pelagic larvae: Most at the end of Aug., few in Oct.

Callionymus maculatus

1914						
07-05	10-15	W Pinhätt	1	120	stomach contents not examined	Trawl at about 18-20m

Year date	No	Station	Number	mm	Lumpenus lampretaeformis	Gear, time, depth	Ser.
1916							
						SB	
04-16	35	NE Ven	1	17	cpd, npl: Psc, Tem; diat: Sceletonema - H	- 20m	
			1	19	cpd, npl: Psc; diat: Chaet. diadema, Sceletonema		
			1	22	cop: 1 Cal. finmarch, 2 Psc; cop-egg, cpd		
04-30	25	W Valagr.	1	22	cop: Psc, Tem, Centrop; diat: Cosc. sp.	- 20m	●
1923							
03-18	35	NE Ven	1	18	cop: 3 Psc, npl: Psc, Tem; diat: Thalassiosira	- 5-6m	●
			1	18	cop: 2 Psc; diat: Chaetoe. boreale		
			1	18	cop: remnants, partly Psc		
			1	20	cop: Psc; npl: Psc, Oith		
			1	21	cop: 1 Psc, 1 Centrop; cpd-r.		
			1	21	cop: 2 Psc, npl: + ; diat: Chaetoc. boreale		
			1	23	cop: 1 Cal. finmarchicus; diat: Cosc. sp.		
03-18	35	NE Ven	1	16	cop: 1 Psc, 1 Tem; npl + ; diat: Thalassiosira	- 10m	●
			1	16	cop: 1 Psc: cop-egg		
			1	16	cop: Psc-remnants; 1 Balanus-npl; diat: 1 Cosc.		
			1	17	cop: Psc- " ; 1 Parac, diat: Thalassiosira		
			1	18	cop: 1 Acart, Psc-remnants		
05-10	25	W Valagr.	1	21	cpd; harpact: abóut 50 mostly Ectinos	20 min 11 + 22m	● 05-09
					The Sound bottom stages		
1915							
06-28	54	Off Kullaberg	1	50	harpact: CC partly Ectinosoma	Larval trawl	
					The Baltic		
-		The Gotland Deep	1	17	cop: remnants	SB - ca 100m	

Occurrence: Bohuslän - the Sound - the Baltic

Spawning: December - January

Own material: Pelagic larvae: Febr. - April (May).

Year date	No	Station	Number	mm	Pholis gunellus	Gear, time, depth	Ser.
1916							
04-16	34	Ven	3	14	Cpd.remnants +, naupl: mostly Psc, Tem, Oith; diat; Thalassiosira	SB 55 min	-
		E Husavik	4	15	abundant cpd + remnants, naupl: mostly Psc, Centrop, diat: Bidd, Cosc		
			2	16	cop: 1 Ac. longir, cpd +; diat: Bidd, Leptocyl.		
			3	18	cop: 2 Psc, 1 Oith, 1 Tem, 1 Centrop; diat: Bidd.-c, Sceletonema, Nitsch. seriata; Distephanus spicul.		
			2	19	cop: 2Psc, cpd, naupl: single		
1923							
03-16	34	E H-k	2	14-15	cpd.r, naupl: Tem, Oith; 1 Peridinium sp.	- 5-6m	•
			2	18-19	cop: 1 Acart, several Psc, cop.r among other things of Parac		
			1	22	cop: Psc, Antropag; diat: Thalassiosira		
03-18	34	E H-k	3	11-13	cop: 1 Parac, naupl: 5 Psc, 1 Oith, 1 Tem	- 8-10m	•
			3	14-16	cop: 1 Acart, 3 Psc, 1 Tem; cop.r: abundant cop-eggs; diat: Thalssiosira		
			1	19	cop: 3 Psc, npl: 1 Psc		
			1	20	cop: several Psc, cop.r		
05-04	42	Off Knähaken	1	17	cpd.r, naupl: Psc, Tem		
			1	25	cop: 5 Psc, 1 Centrop hamatus	5m	• 05-03

Occurrence: Bohuslän - the Sound, the Baltic: up to the Åland Sea

Spawning: January - March

Own material: Only from 03-18 - 05-04 in the Sound 11-19 (25) mm
The Baltic: 1 specimen S Landsort Deep in June 1927

Year date	No	Station	Number	mm	Zoarces viviparus The Sound Gear: drag on 19 m 17.7.10; Larval trawl
1910					Only older stages
07.17		Pinhättan	1	60	Gammarid spp + remnants
1917					
08-16		Barsebäck	2	85	6 + 6 Idoth.
1922					
10-03		Lundåkrabukten	1	98	abundant Idoth
			2	105,110	Gammarid spp + remnants, gastrop: H Hydr., Rissoa
			1	120	" " " " C " "
1923					
05-05		Ven Husv. harbour	5	48-55	gamm. sp, Harpact; Isop: Jaera marina - remnants
08-12		Landskrona, the shore	1	55	abundant Harpact: Ectinosoma, Tachidius and others Isop: Jaera marina
			6	60-63	Harpact: isop: Jaera - 12 specimen in one stomach Polychaet: remnants, mostly Nereis
			1	67	Harpact; isop: 12 Jaera, Polychaet-remnants
			1	67	Harpact, Cyclopider, Ostrac, Chir, polych. remnants
			1	69	Harpact, Cyclop., Ostrac, Chir, polych. remnants
			1+2	69, 70	Harpact, abundant Jaera, Polych. remnants

Occurrence: Skagerrak, Kattegat, the Sound, the Baltic

Spawning: December - February

Year date	No	Station	Number	mm	Hyperoplus lanceolatus	Gear, time, ca depth	Ser.
					The Sound: Dec. - May		
1916							
04-16	34	E H-k	1	9	npl: 1 Psc, 1 Tem	SB 20 min - 22m	-
			3	11-12	npl: Psc, Oith, Tem; diat: Bidd, Cosc		
			2	13-14	cpd; npl: Psc, Oith, Tem		
			1	16	npl: Acart, Psc, Oith, Tem; diat: Sceleton,		
			1	18	cpd: npl: partly Oith, Tem		
1922							
05-06	34	E H-k	1	13	diat: Chaet. boreale	- 0-3m	•
12-17	34	E H-k	1	31	cop: 1 Cal. finmarch., Psc, Tem; cop.egg H	- 5m	•
1923							
02-28	46	Öretvisten	1	13	npl: 4 Psc, 1 Tem	- 14m	-
			1	16	cpd, naupl: Psc, Tem		
03-18	34	E H-k	2	8-9	diat: Chaet, Thalassiosira	- 3-5m	•
			1	9	npl: partly Psc; diat: Chaet, Thalassiosira		
			1	10	1 Balanus-naupl; diat: Thalassiosira		
04-20	34	E H-k	3	15-16	cpd; npl: Psc, Tem; diat: Chaet. Nitschia		•
			1	20	cop: 1 Oith, npl: partly Tem		
			2	22	cop: 4 Psc, 1 Tem ; diat: Chaet, Thalassiotrix		
			1	24	cop: 8 Psc		
05-10	25	W Valagr.	1	12	4 npl: from this 2 Oith		• 05-09
			1	14	cpd, npl		
			1	16	cpd, npl: psc, Tem		
			1	17	cpd, npl: partly Psc		
			1	20	cop: 1 Parac, copr; npl: single		

Year date	No	Station	Number	mm	Hyperoplus Ammodytes spp.	Gear, time, ca depth
					The Baltic, May 1922 and 1923. Probably all Hyperoplus lanceolatus	
1922						
05-12		S Trelleborg	6	10-15		SB 20 min - 5m
05-13		W Bornholm	2	13	alg: Aphaniz-threads	ca 55m
			1	18	cpd, npl: Tem, Centrop	
05-14		S Hanö	1	19	cpd, npl: Tem, Oith	ca 30m
			9	9-17	- -	3m
05-16		E Hanö	1	11	diat: Thallassiothrix, Cosc	12m
			1	11	npl: Arat, Tem	
			1	18	alg: Aphaniz	
05-17		Off Utklippan	3	10-11	npl: Acart, Tem alg: Aphaniz	14m
			1	19	epd.r: npl: Acart " "	
"		"	1	12	npl: 2 Acart, 1 Tem	
			2	14	npl: Acart	
			1	16	11 naupl: Acart, Tem, Centrop	
			2	18	cop: 3 Acart + r, cpd, npl: Acart; Aphaniz	
			3	19-20	cop: Acart, Tem "	
05-20		N Öland	2	11-12	naupl: partly Acart, Aphaniz	35m
1923						
05-05		E Gottland	1	9	cop: 1 Tem, naupl: Acart	60m
			3	11-12	naupl: Acart, Tem	
07-12		E Gottland	1	28	cop.r: from Acart, Centrop	65m
			1	30	cop: Acart, Centrop	
			1	36	cop: " "	

Year date	No	mm	Ammodytes tobianus was found in one stomach of a Baltic herring - ♀ - 20cm
			The Baltic W Visby
1926			
04-06	1	19	cop: 2 Euryt. - ♀ with eggs
	1	20	cop: 2 " - ♀ with eggs
	1	21	cop.r: Euryt, Tem
	1	22	cop: 2 Euryt, 1 Tem, cop.r
	1	22	cop: Euryt r, cop-eggs
	1	25	cop: Tem
	1	26	cop: about 10 Euryt, ♂ and ♀ + abundance with cop-eggs
	1	27	cop r: abundant Euryt, ♂ and ♀
	1	27	cop r: Euryt, cop-eggs
	1	28	cop: 10-12 Euryt, most♀, abundance with cop. eggs

Occurrence: Both species: Kattegat, the Sound, the Baltic

Spawning: Hyperoplus lanceolatus: April - May
Ammodytes tobianus: July - September, maximum in August

Own material: With regard to the size of the larvae and the tim of the year when the catches were made most larvae with certainily can be attributed to Hyperoplus lanceolatus. Larvae from April 1926 off Visby, 10 ex 19-28 mm, were attributed to Ammodytes tobianus. Their stomach contained almost exclusively ad. Euryt, most ♀ with eggs.

It is of interest to note that the sandeel larvae, as well as herring larvae, to a rather big extent had algae in the intestine, in the, in the Sound diatoms, in the Baltic additionally and more Aphanizomenon-threads.

Year date	No	Station	Number	mm	Psetta maxima	Gear	Ser.
					Pelagic larvae		
1922							
09-30	46		1	3	7 npl: partly Oith, Psc	SB	•
			1	6	16 npl: mostly Psc		
					Bottom stages		
1910							
07-06		Barsebäck	1	18	1 harpact, about 50 clad: Evad, Pod	Hand net	
1922							
July		Barsebäck,	1	16	cop: single Euryt, clad: Evad, abundant Pod	"	
		the shore	3	18-20	cop: Acart, Euryt, clad: " " "	0-0.5m	
			2	23-24	gamm j., Mysis j., clad: Evd. CC, Pod H		
			2	27	4 gamm. j, 3 Mysis j, cop: Euryt		
			1	29	Mysis vulgaris + remnants		
			2	30-32	" " "		
			1	38	2 " "		
			2	40-44	Mysis: most remnants		

Occurrence: Bohuslän - the Sound, the Baltic up to Kvarken

Spawning: May - August

Own material: eggs in the middle of Aug., pelagic larvae in Sept.

Scophthalmus rhombus

1914							
07-03		N Ven	1	5	clad: 2 Pod, diat: +		
			1	6	cop r: Psc, cpd r, clad: 2 Evad, 3 Pod		

Occurrence: Bohuslän - the Sound, the Baltic: Blekinge single

Spawning: April - July

Own material: Eggs and pel. larvae in July

Year date	No	Station	Number	mm	Arnoglossus laterna	Gear, time, depth	Ser.
					Pelagic larvae	SB	
1916							
08-24	34	Ven	1	6	Indeterminable visceral contents - "Green food"	- 10m	•
		Off H-k	3	9-11	" " " , however 1 Dinophysis		
08-29	34	"	1	10	Indeterminable visceral content	13+16m	•
			1	10	" " "		
1924							
08-27	48	the north Sound	1	11	Empty		
1925							
08-20	34	E H-k	1	10	Indeterminable visceral contents	15 min	o
			1	14	" " "		
					Bottom stage		
1922							
10-02		the north Sound	1	46	5 Crangon juv.	Danish seine	

Occurrence: Skagerrak, Kattegat down to the Sound

Spawning: July - August

Own material: Pelagic larvae three different years between 20-29 Aug. Stomach contents consisted of a soft amorph mass.
Bottom stage: 1 specimen in Oct. with 5 Crangon in the stomach.

Year date	No	Station	Number	mm	Solea vulgaris vulgaris	Gear, time, ca depth	Ser.
					Pelagic larvae		
1916						SB	
07-24	52 a	Mölle	1	7	cpd r, 11 npl: Acart, Oith, Parac, Psc	- 10m	-
1917							
08-18			1	9	cop: 1 Parac, npl: Oith, Psc		-
1920							
08-18	34	Ven Off H-k	2	6-7	---		●

Occurrence: Skagerrak, Kattegat, the Sound - single, Relatively good fishing at Hallands Väderö in the southern Kattegatt: fishing with nets best in June.

					Microstomus kitt		
1924							
08-21	34	Off H-k	1	8	npl: 2 Acart, 1 Oith	20 min	-
			1	10	about 20 npl: Acart, Oith, Psc	13-20m	
					Zeugopterus punctatus		
1911							
07-18	52		1	8		Larval trawl	
					Phrynorhombus norvegicus		
1924							
08-21	34	Off H-k	1	7	about 10 npl: Acart, Oith, Parac	SB	-
08-21	48		1	6	cop: 1 Acart j, npl: 1 Acart, 12 Oith, 3 Psc, 3 Tem		-

Occurrence: Solea vulgaris vulgaris: Skagerrak, Kattegatt, single in the N. Sound
Microstomus kitt: Skagerrak, Kattegatt, down to the Sound.
Zeugopterus punctatus: Skagerrak, Kattegat.
Phrynorhombus norvegicus: Skagerrak, Kattegat.

Spawning: April-July
" : April-July, spec. August
" : April-July
" : May-July

Year date	No	Station	Number	mm	Platichtys flesus flesus	Gear, time, depth	Ser.
					The Sound Pelagic larvae		
1916							
04-16	34	E Ven	1	9	npl: Tem, diat: 5 Cosc	SB 20 min - 22m	-
1922							
05-06	"	"	3	6	2 specimen was empty, diatom: Sceletonema - threads		
			1	7	diat: Sceleton, Chaet.parts		
			1	7	npl: Tem, Psc; diat: Cosc. sp		
			2	8	npl: " " diat: " "		
05-08	25	Off Valagr.	1	7	diat: Cosc. sp	- 20m	•
			1	9	npl: 1 Psc, 1 Tem		
1923							
04-20	33	Off Bäckvik	1	8	diat: Bidd, Thalassiosira	- 10m	•
			1	8	npl: partly Oith; diat: Bidd, Chaet-parts		
05-04	35	E H-k	4	6	npl: Parac, Psc; diat: Cosc. sp	- 10m	•
			2	7	cpd.r, npl: Acart, Oith, Psc ; 1 Balanus-naupl.		
			3	8	" , more than 20 npl: Oith, Psc, Tem; 1 Balan-npl		
05-10	25	W Valagr.	2	9	cpd r, npl: Oith, Tem, Psc	20 min - 10+20m	• 05-09
					The Baltic Pelagic larvae		
1922							
05-14		S Hanö	2	7	1 specimen without stomach content, 1 specimen: npl: Acart, Tem	- ca 28m	-
1923							
05-15		Off Bergkvara	2	8	npl: Acart, Tem, Centrop	- ca 10m	

Year date	No	Station	Number	mm	Platichtys flesus flesus	Gear, time, depth	Ser.
1926 08-02		the Gotland Deep	1	9	cpd-r: partly Psc, Tem; the eye has moved to the edge of the back	the surface	o
			2	9	without stomach content; the eye on its way to the edge of the back	- 30m	
08-04		"	1	7	cpd.r	30 min	o
			1	7.5	cop.j - Acart, Tem the eye has not yet begun to move	about 45m	
					The Sound Bottom stages		
1922							
July		Lundåkrabukten, river outlet	1	19	Harpact; c	Hand net	
			5	22-25	Harpact: c, Chironomid. l.		
			1	26	10 Simulium, l+p		
			1	30	Gamm.j, harpact, 6 Chir. l		
			2	40, 41	harpact, 9 Chir. l		
			2	48, 49	harpact; ostrac, l Asellus-j		
			1	54	harpact; 2 ostrac, 10 Chir, from this 2 Ch.plumosus		
			2	60, 65	abundant Chir, about 50		
1917		Barsebäck, the shore, sand bank and vegetatia of Ruppia	1	13	harpact: 4 Ectinosoma, npl: 2 Tem	Hand net in about 0,5m	
			2	15	harpact: npl: Euryt		
			1	18	cop: Euryt, Acart-r, harpact		
			6	20-24	gamm-j, cop: Euryt, harpact; clad: Evad		
			4	26-27	harpact; Idoth.j		
			2	30-34	harpact c, ostrac.		
			2	37	Idoth.j, Mysis + r, 1 Coroph, 3 chir		
			4	40-45	25 Coroph, Mysis + r, Idoth-j, polych: Nereis		
			1	48	5 " " + r, " polych: "		
			4	52-60	62 Coroph, gamm.j, Idoth.j, polych, Nereis		

Year date	No	Station	Number	mm	Platichtys flesus flesus	Gear, time, depth	Ser.
					The Baltic Bottom stages		
1922							
09-26		Simrishamn, river outlet	15	28-75	harpact in some specimen, Chir: abundant in all specimen	Handnet	
1924		the coast of Blekinge	7	30-38	cop: Acart, Euryt CC - about 100, Amphip.j, Ostrac-c		
			5	40-52	cop: Euryt CC, 1 Gamm, Mysis H, Ostrac		

Occurrence: Bohuslän - the Baltic to Kvarken

Spawning: February - April

Own material: Pelagic eggs in the Sound - April, May; Pelagic larvae: April - May
" " in the Baltic - May, in the Gotland Deep in the beginning of August

Year date	No	Station	Number	mm	Pleuronectes platessa	Gear time, ca depth	Ser.
					The Sound Pelagic larvae		
1916							
						SB	
04-16			1	7	npl: Psc, Tem, diat: Cosc.	20 min - 20m	-
			2	8	npl: Psc, Tem, Centrop; cpd r		
			2	10	npl: Parac, Tem; diat: Cosc., Thalass., Sceletonem.		
1922							
05-06	34	Ven E H-k	1	9	npl: partly Psc; diat: Chaetoc. chetae	20 min - 20m	•
1923							
03-18			1	9	diat: 3 Cosc (concinnus) - digested	20 min - 6m	
04-20			2	10	npl: Psc, Tem, Centrop; diat: Cosc	10m	
			2	11	npl: 1 Psc, 3 Tem		
05-04	34	Ven E H-k	2	9	npl: Psc Oith		• 05-05
					The Baltic Pelagic larvae		
1922							
05-13		W Bornholm	1	8	Empty		
			1	9	npl: 1 Tem		
05-14		S Hanö	1	9	Empty		
			1	11	npl: 1 Acart, 1 Tem		o
05-16		E Hanö	2	8	npl: partly Acart, cil: Tintinnid	20min - 13m	o
05-17		Off Utklippan	1	9	npl: partly Acart		o

Year date	No	Station	Number	mm	Pleuronectes platessa	Gear	Ser.
					Bottom stages		
1910							
07-06		Barsebäck, the harbour	1	43	npl: Euryt; Harpact-c, Clad: Evad cc, more than 100, Pod.c	Hand net	-
1923		Barsebäck, the shore	1	35	1 Gamm.j, cop: Acart, Euryt. Harpact H clad: Evad c, Pod H	"	-
			1	42	Cop: Acart, Mysis-remnants, clad: Evad c, Podon +, Harpact		
			1	54	Gamm.c-j, cop: Euryt +, clad: Evad +		
			1	56	Gamm:cc, clad: Evad c, Polych: Nereis		

Occurrence: Skagerrak, Kattegat, the Sound, the southern Baltic c, at Gotland -r

Spawning: January - May

Own material: Pelagic eggs in the Sound December - April maximum at the end of Dec.(60 out of 75) also relatively abundant in samples from February.

Year date	No	Station	Number	mm	Limanda limanda	Gear, time, depth	Ser.
					The Sound Pelagic larvae		
1916							
						SB	
07-17	34	Ven	4	6-7	npl: Acart, Oith, Parac, Psc	- 13m	• 07-19
		NE H-k	2	10-11	npl: Acart, Oith, 11 Tem, cpd.r		
07-20	"	"	8	7-11	cpd-r; naupl: relatively abundant		• 07-19
08-05	"	"	4	6-7	npl: Acart, Oith, Psc	- 20m	-
			3	8	cpd; npl: Acart, Oith		
			1	10	14 npl: predominant Acart, Oith		
08-24	"		5	6-7	npl: Acart, Oith	30 min 15m	
			2	8	cop: 1 Euryt, Tem.j, npl: Oith, Tem, Psc		
			1	10	cop: 1 Tem, 1 Psc, cpd-remnants		
08-24	"	"	8	7-11	cpd; npl: Acart, Parac, Centrop, Tem, Psc	- 10m	•
1917							
07-13	34	E H-k	2	7	cop: 1 Oith, npl: Parac, Psc-c		
			2	9	cop: 1 Acart, cpd-r: Psc-c, npl: Acart, Oit, Tem	- 18m	•
			1	10			
08-18	"	"	6	6	npl: Acart, Oith, Psc (early stages)	60 min	-
			1	7	npl: 3 Acart, 5 Oith, 1 Tem	10-15m	
			5	7	npl- abundant, Acart, Oith, Parac, Psc, Tem		
			2	8	npl: 10 specimen, Acart, Psc, Tem		
			2	8	cop: 1 Acart, cpd.r, npl: Acart, Oith, Psc, Centrop.		
			3	10	cop: 2 Psc-j, 2 Tem-j; 20 npl: Acart, Oith, Psc		
			3	10-12	cop: 1 Euryt, 5 Tem, 2 Psc; cpd, npl: Acart, Tem		

Note: Larvae 6-8 mm: Position of eyes horizontel
10-12mm: Eyes have started moving

Year date	No	Station	Number	mm	Limanda limanda	Gear, time, depth	Ser.
					The Sound Pelagic larvae		
1920							
08-17	34	Ven NE H-k	2 4 3	8-9 10-11 12	cpd-r, npl: Oith, Psc, Centrop cop: Oith, Tem, Psc-c; cpd; npl: + cop: 1 Parac, 6 Psc, 1 Tem, cop-egg, cpd, npl	20 min - 25m	
1922							
08-14	25	Off Valagr.	1 1	8 9	cpd.r: partly Psc, npl: Acart, Psc cpd.r: " " npl: " "	20 min - 20m	●
08-15	34	NE H-k	1 4 3	7 8 9	cpd.r, npl: Tem cop: 2 Tem, 2 Psc; cpd.r, npl: Psc-c, Oith cop: 1 Acart, 3 Tem, 1 Oith, cpd-r +, npl: +	20 min - 16m	
08-31	"	"	4 2 2 2	7 8 9 11	npl: Acart, Oith, Psc-c npl: Oith, Psc-c cop: 1 Tem-j, cpd-r; npl: partly Psc cop: 2 Tem, 1 Parac, 2 Psc-j; cpd-c, 1 Cosc.	40 min - 13 o 20m	●
					The Sound Bottom stages		
1910							
09-21		Off Malmö	3 1 1	21-25 37 41	Amph.j - c " " + remnants H, Mysis - parts; Polych. - remnants Amph.j remnants, Mysis - parts	Larval trawl	
09-22			1	27	Amph.j, Dulichia (porrecta?) + remnants	"	
1911							
07-07		Outer Lomma-bukten	1 1 1	42 50 52	11 Harpact; Laophorte and others, Ostra c, 2 Lamm.	"	
1913							
10-15		the north Sound	1	28	Dulichia + remnants, Podalirius	"	

Year date	No	Station	Number	mm	Limanda limanda	Gear, time, depth	Ser.
					The Sound Bottom stages		
1914							
10-04		N Lundåkra-bukten	2	27,28	Dulichia, Polych: remnants	Larval trawl	
1922							
09-28		St. 42 S. Disken	1	45	Gammarid-sp: Calliopus?; 2 Podalirius, 5 Eudorella, Polych: remnants	Danish seine in about 18m	
			1	48	Eudorella, 3 Podalirius, Polych: remnants		
10-08		st. 40 Off Råa	1	14	Harpact: Laoph., Ectinos; Cyclopina clad: Bosm	Larval trawl in about 18m	
			4	16	cop: 1 Psc, Harpact-c, Clad: Bosm.r, diat: Melosira; bottom forms		
			2	17	Harpact:c. Cyclopina, Clad: Bosm +, Polych:r bottom diat		
			4	18-19	2 cop: Tem, clad: Bosm cc, Polych.r		
			7	20-21	Harpact:cc, Amph j, 2 Ostra c, Polych. r, 1 Eupagurus-zoea, 3 Sagitta + fish eggs, bottom diat		
			7	22-23	Harpact:c, Clad: Bosm. was found in 5 specimen, in one cc, Ostracod, Polych.r, - 1 Eupag.l; bottom diat		
			8	24-28	Harpact; Gamm juv, Bosm in 4 specimen, Ostrac, Polych.l, 2 Podalirius		
			7	31-38	Harpact: about 30 Podalirius, Amph: Dulichia		
			3	41-45	Harpact: Podalir. C; Dulichia F		
			3	50-54	Harpact: 26 Podalir; Eudorella-remnants, Amph:r, Polych-remnants-c		

Occurrence: Bohuslän - the Sound, the Baltic up to Gottland

Spawning: April - May

Own material: In the Sound eggs in May, pelagic larvae: July - Aug.

Year date	No	Station	Number	mm	Gadus morhua morhua	Gear, time, ca depth	Ser.
					The Sound Pelagic larvae		
1916							
04-30	25	W Valagr.	3	6	cpd+r, npl: mainly Psc	SB - 28m	•
			1	6	cpd+r, npl: mainly Psc; diat: Sceleton		
			1	8	cpd, npl: partly Psc, Tem		
1922							
05-04	40	Off Råå	1	7	diat: Biddulph. aurita (digested)	30 min - 15m	
			2	11	cop: 1 Parac + remnants		
05-06	34 a	Ven	1	7	npl: Acart, Psc; alg: Aphanizom	20 min - 3-4m	•
		E H-k	1	9	cop: 1 Acart, npl: partly Acart		
			1	11	cop: 3 Acart longiremis, 1 Psc-j		
05-06	34	E H-k	4	6-7	cpd-r, npl: Acart, Psc	20 min - 20m	•
05-08	25	W Valagr.	3	7	cop: Acart-j, cop:r - partly Psc, cop:eggs	20 min - 10m	•
			2	8	cop:r: partly Acart, Psc		
			2	10	cop: Psc, Tem, Centrop		
			2	11	cop-skin: Acart, Tem; 1 Ostrac		
			1	13	cop: 1 Calanus, Psc, cop egg - digested		
05-08	25	"	3	5-7	npl: Acart, Tem, Psc	20 min - 20m	•
			1	6	npl; diat: Melosira cells		
			2	8	cop: 1 Psc, npl: Acart, Psc		
			1	8	cop: 1 Oith. similis, 1 Psc		
			3	9	cop: Acart, Psc; npl		
			1	10	cop: Psc, cop, egg; npl		
1923							
02-20	46	Öretvisten	1	5	npl: partly Psc (early stage)	- 18m	
03-18	33	E H-k	5	5	npl: partlt Psc. diat: Chaetoc - parts	- 8-9m	•
			3	6	npl; diat: Thalassiosira		
			2	10	cop.r: partly Psc, diat: Chaetoc-parts		

Year date	No	Station	Number	mm	Gadus morhua morhua	Gear, time, ca depth	Ser.
					The Sound Pelagic larvae		
1923						SB	
04-20	33	Ven	2	5	npl: partly Tem		
		E H-k	5	6	npl: partly Psc, cpd: Psc; diat: Chaetoc.parts	20 min - 10m	•
			3	7	npl, cpd		
			2	8-9	cop r: Psc, cpd: partly Psc		
			3	10-11	cop: 5 Psc, 1 Parac; cpd; npl		
			2	12-15	cop: 7 Psc, 1 Parac, 1 Centrop; cop-egg		
04-20	33	E H-k	1	4	naupl: 1 Oith		
			1	7	cpd: 2 Psc		
05-04			4	7-8	cpd:r: most Psc; npl: 1 Tem	- 18m	•
~~04-05~~	40	Off Råå	3	5	npl: Acart, Psc	30 min - 10+15m	• 05-05
			6	6	cpd.r; npl: most Psc, Tem		
			4	8	cop: + Acart; cpd-r, npl: Pseudoc, Tem, Acart diat: Chaetoc, cells		
			11	9	cop: Acart, Oith, Psc-j C, npl: Acart, Psc, npl: Tem, Centrop		
			24	10-12	cop: Psc-c, Centop; diat: Chaeto c, cells		
			4	13-14	cop: Psc, Acart, Parac, Tem; cpd: Psc, naupl: Centrop, Tem		
			1	16	cop: Psc abundant Parac, Oith, Euryt; cpd-r		
					The Sound: older stages		
1914							
July	34		1	16	cop: 1 Tem, 1 Centrop; cpd: partly Tem	- 15m	
1917							
07-14	34		1	18	cop: Cal. finmarchicus, several Psc; cop-remnants	-	
1922							
Okt.		Lundåkra-	1	32	cop: Acart, Tem c, clad: Bosm cc, Podon	Larval trawl	
		bukten	1	45	cop: abundant Tem; clad: Bosm cc, Podon	in 8-10m	

Year date	No	Station	Number	mm	Gadus morhua morhua	Gear, time, ca depth
					The Baltic Pelagic larvae	
1921						
09-02		Landsort Deep	1	19	cop: abundant Psc, ♀ partly with eggs + remnants	SB - 100m
09-07		"	1	11.5	cop: Psc + remnants	" - 100m
			1	18	cop: Psc - mainly parts	
1923						
05-15		Off Trelle-borg	3	6.5-7	cpd-r; npl: partly Acart	" - 10m
06-15		the north shole of Öland	2	5-6	cop: 1 Psc.j, npl: Psc; rot: 1 Synchaeta baltica	" 20 min - 13m
07-06		-	2	5.5	npl: 3 Psc	Egg net 129-0m
			1	7	cpd r; npl: 1 Psc	
07-06		15' ESE Grön-holmen	1	4	unspecified visceral contents	SB - 150m
			1	6	cpd: 1 Psc, npl: 1 Psc	
			1	9	cop: Psc - parts, cpd-remnants	
		1.5' W Nyrevs udde	1	8	cop: Psc	" - 60m
1924						
08-09		the Gotland Deep	3	7-7.5	cop: 1 Psc.j, 1 Acart npl: 5 Psc	" - 70-80m
			1	11		
08-09		"	4	6	cpd: e Psc, npl: 5 Psc	" 20min - 50-60m
			7	7	cpd: about 20 Psc, npl: 6 Psc	
			3	8	cop: Psc.j; cpd-r; npl: 5 Psc	
			2	9	cop: 2 Psc.j; cpd-r, npl: 2 Psc	
			4	10-11	cop: about 12 Psc.j + remnants	
08-12		W Klints bank	1	6	npl: 7 Psc	" 20 min
			1	8	cpd: 5 Psc, npl: 4 Psc	ca 75m

Year date	Station	Number	mm	Gadus morhua morhua	Gear, time, ca depth
1924					
08-12	Gotland Deep	3	7-9	cpd: Psc	SB 20 min - ca75m
		3	10	cop: 1 Psc.ad ♀, Psc-j, npl: 1 Psc	
		2	11,12	cop: 2 Psc.ad ♀, abundant Psc j, 1 Psc-naupl	
08-21	17' SE Ronehamn	3	7	cop-r: Pseudoc, 1 Acart longiremis	SB 20 min - 50-75m
		3	10-11	cop: Psc.j + remnants mostly Psc	

Gotland Deep 2-4.8.1926

	Time	Number	mm		SB 30 min. haul with
1926					
08-02	a.m. 10.00-10.30	1	5	npl: 2 Psc	- 55m
		4	6-7	cpd.r, Psc, npl: Psc	
		8	8-10	cpd r: at least,mostly Psc; npl Psc	
	a.m. 11.00-11.30	3	6-7	cpd.r: Psc, npl: Psc	- 100m
		3	10	cpd.r: Psc: npl: Psc	
08-03					
~~03-08~~	night 02.30-03.00	12	5-7	cpd r: Psc; npl. Psc	- 50m
		2	8	cop:r: Psc; npl Psc	
		2	8	cpd:r: Psc: npl Psc. 1+1 Cerat tripos	
		3	9-10	cop.r: Psc; cpd: at least mostly Psc	
		1	12	cop: 1 Psc ♂ + remnants	
"	night 03.15-03.45	31	5-7	cop: abundant Psc j, 1 Acart; cpd.r, npl-r	- 50m
		7	9-10	cop: abundant Psc j, 2 Acart. longer; cpd	
	a.m. 11.00-11.30	1	10	cop: Psc.j + remnants	- 50m
	a.m. 11.30-12.00	-	-	no cod larvae (but 3 Pl. flesus)	surface
08-04	night 02.30-03.00	1	7	empty	- 20m
	morning 07.20-07.50	11	5-10	cop, cpp, npl: Only Psc observed	- 45m

Cod fry in the central and northern parts of the Sound

Summary of appendix 29. Horizontal hauls with SB-net in different depth

Year season	ca depth in m	Larvae number	mm	Stomach contents (except algae)
1916-1923				
Feb.- May	3-4	3	7-11	cop: 4 Acart, 1 Psc.j; npl: partly Acart
	8-10	37	5-15	cop: Acart, Psc, Tem, Centrop; cop-eggs
	10-15	53	5-16	cop: " " " " " npl: Ac., Psc
	15	4	7-16	cop: 1 Parac, 1 Tem, 1 Centrop; cpd
	18-20	22	5-10	cop; Acart, Psc, Oith; npl: Ac., Psc
	28	5	6-8	cop: -remnants; npl: Psc, Tem
			Older stages	
1914-July		1	16	cop: 1 Tem, 1 Centrop; cpd: partly Tem
1917-July		1	18	cop: 1 Cal. finmarchicus, several Psc
1922-Oct.		1	32	cop: Tem-c, Acart; clad: Bosm cc, Podon
Lundåkra-bukten		1	45	cop: Tem c, clad: Bosm cc, Podon

The summary shows clearly that pelagic larvae were obtained in early spring (most numerously in April), probably from spawning (in the Kattegat?) during January and February. No pelagic larvae were found in the samples taken after the beginning of May. Older phases, 16 and 18 mm in July, 32 and 45 mm in October.

Cod fry from the Baltic Sea

Horizontal draw with SB-net in different depth

Year season	ca depth in m	number	mm	Stomach contents (except algae)
The Landsort Deep				
1921				
2-7 Sep.	100	3	12-19	cop: abundance Psc, ♀-partly with eggs
The Gotland Deep				
1924				
9 Aug.	75-80	40	6-12	cop: about 50 Psc (most juv.), 1 Acart, cpd: Psc
1926				
2-4 Aug.	0	-	-	
	20	1	7	no stomach contents
	45	11	5-10	cop:,cpd, npl. - Exclusive Psc
	50	59	5-12	cop: partly Psc (most juv.); npl: Psc
	55	13	5-10	cop: Psc; cpd: Psc; npl: Psc
	100	6	6-10	cop: partly-Psc; npl: Psc

Specimens reported from the deep parts of the northern Baltic show distinct concentrations of cod fry at depths around 50 m, where salinity normally increases to more than 10‰ as compared with c. 7‰ nearer the surface. An abundance of fry as small as 5 mm in August suggests that spawning continuse into July. During the latter half of June 1927, cod fry were obtained in great quantities from Landsort Trench at depths of c. 50 and 125 m (appendix 45).

Algae in the stomachs of cod fry (appendix 39, p. 6)

The Sound, 1916 - February-May

Silicon algae:	Biddulphia sp.	H
	Chaetoceras cells	C
	Melosira sp.	H
	Sceletonema	H
	Thalassiosira	H
Bluish-green algae:	Aphanizomanon	+

in one specimen together with two nauplii.

The Baltic Sea. The Gotland Trench, 1916 - August (appendix 29)
Dinoflagellata: Ceratium tripos - two specimens in 8 mm larvae

Rather many algae were often found also in the stomachs of early phases of herring and sprat fry (appendix 39). In the Sound, mainly silican algae were found largely in shells with the cell content leached out. In some cases the whole content of the intestines and stomach consisted of algae. One is inclined to believe that also algae are used to some extent as food.

Year date	No	Station	Number	mm	Molva molva	Gear	Ser.
1924							
08-21		Off Ven	1	7.5	15 npl: Acart, Oith, Psc	SB -	-
					Trisopterus esmarki		
1924							
08-21		Off Ven	1	6	npl: partly Oith	SB - 13 o 20m	-
			1	8	cpd.r, npl: Oith, Psc		
			1	9	about 20 npl: partly Oith, Psc		
					Melanogrammus aeglefinus		
1923							
05-04	34	Ven	1	5	npl: 2 Psc	SB - 15m	• 05-04
		E H-k	1	5	npl: 1 Parac, 1 Oith } early npl-stages		
			1	5	npl: 1 Oith, 1 Psc		
			1	9	abundant npl: partly Psc; Harpact:r		
			1	10	cpd, 16 npl, partly Psc		
05-09	25	Off Valagr.	1	6.5	npl: partly Oith	SB - 15m	•

Occurrence: Molva molva. Skagerrak, Kattegat - the Sound-single

Spawning: March - June

Own material: When fishing with jig between Hallands Väderö and Kullanäsan I not seldom caught ling, mostly small specimens, 0.5-1 kg, sometimes even single big ones, max 5 kg.

Occurrence: Trisopterus esmarki. the northern Skagerrak - off Strömstad

Spawning: Feb. - May

Own material: The few pelagic larvae from the central Sound in August 1924 can point to some later spawning, even in the Kattegat.

Occurrence: Melanogrammus aeglefinus. In Skagerrak and the north of Kattegat in deep water (according to Schmidt)

Spawning: Feb. - May

Own material: May 1923 the only occasion when I observed pel. larvae in the Sound.

Year date	No	Station	Number	mm	Merlangius merlangus merlangus	Gear, time, ca depth	Ser.
1914							
07-06	5-12	the outer Lundåkrabukten	1	3.5	npl: 1 Psc	-	-
			1	5	cop: 2 Psc		
			1	6.5	cop: Psc		
			2	9	cop: Psc, clad: Podon		
07-06	34	Ven E H-k	1	18	cop: 1 Tem clad, 10 Podon	-	-
1916							
08-24	34	"	1	10	cpd:r; npl: partly Acart, Oithona	SB - 30m ca 15m	•
1923							
05-05	"	"	1	4	npl: 1 Psc		•
			1	5	npl: + remnants		
			1	5.5	1 cpd; 6 npl; diat: 4 Chaetoch. cells		
1924							
08-21	33	the central Sound off Ven	1	5	6 npl: partly Tem, Psc		
			1	6	10 npl: Oith, Parac, Psc		
			2	8	cpd.r: partly Psc		
			1	9	cpd.r: partly Psc		
			2	10	cpd.r: partly Parac, Psc		
08-21	46	Öretvisten	2	8	cpd: partly Psc		-
			1	13	cop: 1 Acart. longir, Psc-j, 1 Centrop; cop-eggs		
			1	15	cop: 2 Acart, Psc-j		
			1	17	cop: 2 Acart. longir; 1 Centrop, 1 Psc		

Occurrence: Skagerrak, Kattegat c, the Sound + ; the Western Baltic.-r.

Spawning: Feb. - July

Own material: Pelagic larvae were taken in the Sound in May, however, mainly in July - Aug. According to Otterström not earlier mentioned from the Sound.

Gasterosteus aculeatus

Year date	Number	mm	Acart	Parac	Temora	Euryt.	Centrop.	Harpact	Bosmina	Evadne	Podon	Iaera	Chir	Gear and note
The Sound														
1922														
10-03 Lund-åkrab.	1	52	-	-	+	-	+	H	C	-	C	-	-	Larval trawl in 5-6m depth
1923														
05-05	1	20	-	C	-	+	-	C	-	C	+	-	-	Ven, Husvik, the harbour
	1	23	-	H	-	+	-	C	-	C	+	-	-	
08-12	1	50	-	-	-	-	-	C	-	-	-	-	-	Landskrona
The Baltic														
1922														
05-16	1	48	-	-	-	-	-	-	-	-	-	C	-	Off Karlskrona
1924														
10-20	1	17	+	-	+	+	-	-	-	-	-	-	C	

Note: Harpacticid genus : Ectinosoma, Idya, Tachidius (and others)

Occurrence: according to own material the Sound - southern Baltic Spawning: May - June

Spinachia spinachia

Year date	Number	mm		Gear and note
1922				
10-03	1	13	Gamm.r + Idothea viridis - CC	Lundåkra-b.
	1	15	" ",Mysis remnants +; Hydroida	

Occurrence: the Sound up to Gottland Spawning: April - May

Pungitius pungitius

Year date	Number	mm	Acart	Paracal.	Temora	Euryt	Centrop	Harpact	Bosmina	Evadne	Podon	Iaera	Ostrac	Polych. remnants	Chir	Alga threads	Note
The Sound																	
1922																	
10-03	1	25	-	-	-	-	-	-	CC	-	-	-	-	-	-	+	Nodul.fragm.
Lund-	1	26	-	-	-	-	-	-	CC	-	-	-	-	-	-	-	
åkrab.	1	30	-	-	-	-	-	-	CC	-	-	-	-	-	-	+	" "
	1	31	+	-	-	-	-	-	CC	+	-	-	-	-	-	-	
	1	35	-	-	-	-	-	-	CC	-	-	-	-	-	-	-	
	1	40	-	-	+	-	-	-	C	-	-	-	-	-	-	-	
	1	42	+	-	-	-	+	-	C	H	+	-	-	-	-	-	
	1	50	+	-	+	-	-	+	-	H	-	-	-	-	-	-	
1923																	
08-12	1	52	-	-	-	-	-	CC	-	-	-	-	+	+	-	+	
Lands-	1	54	-	-	-	-	-	CC	-	-	-	-	-	+	-	r	
krona																	
The Baltic																	
1922																	
05-16	1	23	+	-	-	-	-	C	-	-	-	-	+	-	+	-	
	1	25	-	-	-	-	-	C	-	-	-	-	-	-	C	-	
	1	26	-	-	-	-	-	-	-	-	-	-	-	-	H	-	
	1	27	-	-	-	-	-	+	-	-	-	-	H	-	-	-	
	1	28	-	-	-	-	-	H	-	-	-	+	+	-	+	-	
	1	28	+	-	-	-	-	C	-	-	-	-	-	-	-	-	
	1	29	-	-	-	-	-	H	-	-	-	-	+	-	C	-	
	1	32	-	-	-	-	-	+	-	-	-	-	+	-	+	-	
	1	41	-	-	-	-	-	H	-	-	-	-	C	-	C	-	
	1	57	-	-	-	-	-	C	-	-	-	+	H	-	-	-	

Note: Harpacticid-genus: Ectinosoma, Tachidius, Mesochra. Naupl. - missing

Occurrence: According to own material: the Sound - southern Baltic.

Spawning: May - June

Year date	Station	Number	mm	Entelurus aequareus	Gear, ca depth
1916					
09-05	Off Ven	1	17	cpd; npl: partly Oith, Psc	SB -
1917					
07-13	S Ven	1	50	cop. remnants: Acart, Euryt c	- 6m
07-14	Off Ven	1	13	cpd; npl: partly Oith, Parac	- 5m
1924					
08-27	Öretvisten	1	19	npl: abundant Acart, Psc, Tem	
1925					
08-20	Off Ven	1	25	cop: 2 Acart, 1 Parac; cpd	- 20m
		1	54	cop: 11 Psc, 3 Parac, 2 Centrop. + remnants	

Occurrence: Skagerrak, Kattegat; few in the northern Sound

Spawning: June - July

Nerophis lumbriciformis

1914					
07-05	st. 49 Off Hornbäck	1	120	----	Trawl

Occurrence: Skagerrak - the southern Kattegat - no common

Year date	No	Station	Number	mm	Nerophis ophidion	Gear, time, ca depth	Ser.
					The Sound		
1916							
						SB	
07-26	52 a	Off Kullen	1	19	cop: 1 Centrop.j; npl: partly Psc, Tem	- 25m	-
08-24	34	E H-k	1	22	cop: 3 Oith, 1 Parac; 3 cpd	-	●
09-23	"	" "	1	23	cop: Parac, Tem-j, cpd	40 min - 13m	●
			1	98	----		
09-30	42	N Ven	1	115	cop: about 30, Parac.c, Psc, Tem	- 10m	-
1917							
07-13	34	E H-k	1	50	cop: most fragm., Acart, Parac, Euryt Lammelli br. 1	- 10m	-
1922							
10-03	-	Lundåkra-bukten	1	120	Gamm.j, cop: Tem, Ostrac, Idothea j.	Larval trawl in 4-6m	-
			1	150	" "; harpact: Idya and others, Idothea j.		
			1	155	" "; Mysis, Idothea j.		
			1	170	Gamm-remnants, Ostrac, Idothea j.		
					The Baltic		
1924							
10-14	-	Kalmarsund	1	105	Cop: Tem; harpact; gastropod-1	SB - 13m	-

Occurrence: The Sound - the Baltic

Spawning: April - July

Own material: This species was very abundant in the Lundåkrabukten. In spite of the fact that Bosmina at the same time was very abundant it was lacking in the stomach. The reason for this may be that only a few big specimens of Nerophis (more than 120 m) were examined. Compare Syngnatus.

Year date	No	Station	Number	mm	Syngnathus typhle	Gear, ca depth	Ser.
					The Sound		
1917							
07-14	34	Ven, E H-k	1	28	cop: Acart, Euryt, Tem, alg: Cerat. tripos H	SB - 15m	• 07-13
1922							
10-03	25	W Valagr.	1	21	Empty		•
10-03		Lundåkrab.	1	70	Gamm.j, Harpact, Idothea j	Larval trawl	-
		in 4-6m	1	80	cop: Tem, Clad: Bosm, Evad, Podon		
		depth	1	85	cop: Acart, Tem, Centrop; Clad: Bosm, Evad		
			1	100	3 Mysis		
			1	130	1 Gobius-larva, fish larvae-remnants		
			1	160	5 Mysis, 1 Crangon j.		
1923							
05-05	34	E H-k	1	60	Cop: Acart, Tem, harpact: Idya and others	SB	•
					The Baltic		
1924	-	Off Berg-	1	29	cop: Acart. bifilosa c, Euryt, Tem	-	-
		kvara	1	30	cop: Acart, Euryt		

Occurrence: the Sound - the Baltic up to the Bothnian Sea

Spawning: May - June

Own material: The species was abundant in Lundåkrabukten on bottoms with algal vegetation and Zostera.

Belone belone belone

Year date	No	mm	Acart.	Paracal.	Eurytem.	Pseudoc.	Centropag.	Temora	Harpact.	Copep.=egg	Evadne	Podon	Gastrop-l	Dipter-imag
1914														
07-04	2	13	-	-	-	-	-	-	-	-	+	-	-	-
	1	17	+	+	-	-	-	-	-	+	-	-	-	-
1917														
07	4	13-14	+	C	-	-	-	-	-	+	-	-	-	-
Barse-	1	17	+	+	-	-	-	-	H	-	-	-	+	-
bäck	2	20	H		+	+	-	-	H	-	-	-	-	-
harbor	6	27-29	C	H	-	-	+	-	+	+	+	+	-	-
and beach	4	30-33	-	oa 50 ex	H	-	-	+	H	+	+	-	+	+
	3	35-38	C	+	+	-	-	-	+	-	+	-	+	C
	6	40-47	C	C	C	-	-	-	-	+	C	H	H	-
	5	50-55	H	C	H	-	+	-	+	-	C	H	-	-
	2	60	+	H	C	-	+	-	+	-	C	H	-	-
	1	62	+	-	+	-	-	-	+	-	H	-	-	-

Three specimen from July 1914 and 34 specimen from July 1917 taken in and outside the harbour in Barsebäck with hand net on the surface.

Belone belone belone 34 specimen taken with plankton net in surface in and just outside the harbour in Barsebäck in July 1917.

No	mm	Acart.	Paracal	Eryt.	Pseudoc.	Centrop.	Temora	Harpact.	Cop.egg	Evadne	Podon	Gastrop larvae	Dipter-imag
1	13	+	-	-	-	-	-	+	+	-	-	-	-
2	14	+	+	-	-	-	-	-	-	-	-	-	-
3	14	+	C	-	-	-	-	-	+	-	-	-	-
4	14	+	+	-	-	-	-	+	+	-	-	-	-
5	17	+	+	-	-	-	-	C	-	-	-	+	-
6	20	C	-	-	-	-	-	+	-	-	-	-	-
7	20	+	-	+	+	-	-	-	-	-	-	-	-
8	27	+	C	+	-	-	-	-	+	-	-	-	-
9	28	+	C	-	-	-	-	C	-	-	-	-	-
10	28	C	C	-	-	-	-	-	-	+	+	-	-
11	29	+	C	-	-	+	-	-	-	-	+	-	-
12	29	+	+	-	-	-	-	-	-	-	-	-	-
13	29	+	-	-	-	+	-	-	+	-	+	+	-
14	30	-	C	-	-	-	-	-	+	+	-	-	-
15	32	-	-	C	-	-	+	C	-	+	-	-	-
16	32	-	-	+	-	-	-	-	-	-	-	+	+
17	33	-	C	-	-	-	-	-	-	+	-	-	-
18	35	-	-	+	-	-	-	+	-	-	-	+	-
19	38	+	+	+	-	-	-	-	-	-	-	+	-
20	39	+	+	-	-	-	-	+	+	+	-	-	C
21	40	C	+	-	-	-	-	-	-	+	+	-	-
22	40	-	C	-	-	-	-	-	-	+	-	+	-
23	40	+	C	+	-	-	-	-	-	C	+	-	-
24	45	+	C	C	-	-	-	-	-	C	-	-	-
25	45	+	C	+	-	+	-	-	-	-	+	-	-
26	47	-	+	C	-	-	-	-	-	C	+	-	-
27	50	C	+	-	-	-	-	-	-	C	+	+	-
28	50	+	C	-	-	-	-	-	-	C	+	+	-
29	52	+	+	-	-	-	-	-	-	C	+	-	-
30	54	+	C	-	-	-	-	-	-	C	+	-	-
31	55	+	+	-	-	C	-	-	-	C	+	-	-
32	60	-	C	+	-	+	-	-	-	C	-	-	-
33	60	+	+	C	-	-	-	-	-	C	+	-	-
34	62	-	+	+	-	-	-	-	-	C	-	-	-
	+	21	13	9	1	4	1	5	7	6	13	8	1
	C	4	13	4	-	1	-	3	-	11	-	-	1
	Sum	25	26	13	1	5	1	8	7	17	13	8	2

Remark: Length and stomach content for every single individ according to the original record.

Belone belone

Comments on tables 1 and 2

It is said in the introduction that information of stomach contents in the primary tables, given as a rule for single individuals, is often, for reasons of space, collected to form groups. For uncommon fish species (fewer than ten fry), however, the stomach contents are given as a rule for each individual.

A more certain determination of length and stomach content may be obtained in a table with data on each individual. Table 2, for example, gives data on the garfish.

Copepoda nauplii and copepodites are practically completely absent in the 34 specimens reported in table 2.

Acartia and Paracalanus: These relatively small copepods were found rather regularly. They were observed in 25 and 26 respectively of 34 specimens and were already dominant in such small fry as 14 and 24 mm.

Paracalanus in particularly was dominant in several fry 25-30 mm and 40-60 mm in size.

Eurytemora: This rather larger copepod was found in 13 fry, and marked as C (dominant) in 4 specimens 32 mm and 45-60 mm in size.

Pseudocalanus was observed in only one fry 20 mm long. It is in deeper water of relatively high salinity that it becomes general. The fact that it was practically absent from the stomachs of garfish fry was because these fry were all caught in the surface water (with a hand net).

Centropages were noted as + in four fry, and as C in a fry 55 mm long.

Temora. Ad.-Temora occur at about the same levels as Pseudocalanus, and, like this, was observed in only one fry.

Harpactides comprise both large and small forms. They were found in fry 13-39 mm in size, in three of them as C. They were lacking in larger fry, from 40 mm in size.

Copepod eggs were usually found free in the contents of stomachs and intestines. In any case, most of them seem to pass through the intestines undigested.

Cladocera. Rich occurrence in plankton of Evadne and Podocopa. Found in fry from 28 mm in size.

Evadne. Dominant regularly in fry between 40 and 62 mm, and may then be regarded as the most important food of such fry.

Podocopa were recorded in 13 fry, although not as dominant.

Gastropod larvae were found in 8 fry of varying size, but not classed as C.

Dipterimagina were reported in two fry, 32 and 39 mm, in the latter size as C. Sometimes fry were seen to jump above the surface to catch these air insects.

Some conclusions may be drawn from the above data.

1. The two small copepods Acartia and Paracalanus were consumed by most of the fry and may therefore be regarded as important items of food, especially Paracalanus, which was dominant in 13 stomachs.

2. Only one specimen each of Pseudocalanus and Temora was observed. For the reason, see above.

3. Cladocera. It was only in larger fry between 40 and 62 mm in size that Evadne and Podocopa were found in large numbers. Evadne in particular dominated the stomach content, and may be considered the most important source of food for fry larger than 40 mm.

4. Two of the fry had taken air insects, one of them in large numbers.

The garfish comes to the Sound in dense shoals to spawn in May to the beginning of June. In the Sound, in Lundåkrabukten and other places, it spawns on sandy and grassy bottoms in the 1.5 m-deep channels between the sand reefs. It is then caught during a relatively brief period in nets.

The fry remain in the surface water near land, and I have observed them in great numbers and caught them during July, but never later, in spite of several expeditions in the Sound in August. I am therefore inclined to believe that the fry move to deeper water when they attain a size of c. 60 mm, and then migrate towards the Skagerrak and the North Sea.

Year date	Station	Number	mm	Anguilla anguilla
1922				
06-13	Rydebäcken S. Råå	1	6.4	11 Gamm.j, 2 Cyclops, 5 Bosm. diat: Synedra sp. naviculacea . . and others
		1	6.5	1 Gamm.j, 2 dipt.l, ciliater ; diat:cc: Synedra, naviculacea , Pleurosigma sp, + blåalger: Anabaena sp, Oscillat. spp. H
		1	6.7	= previous + 3 Cyclops; alg: fragment from Cladophora.
		1	6.1	2 dipt.l; diat: Synedra, Navic; alg: Lyngbya sp. H
		1	6.8	1 dipt.l; alg-threads +
		1	7.0	1 Cyclops, 2 stickleback-eggs; diat:H, alg:Lyngbya H.
1922				
09-26	Gislövs.bäck south coast of Skåne	1	6.7	1 Chir-l
		1	9.5	1 Gamm; abundant: Chir.l; diat: naviculac. and others
1923				
03	Rydebäcken	1	66	diat: Synedra sp. naviculacea H.
03-15	Klagehamn	1	68	incomplete pigmented; no intestine content.
05-05	H-k-harbor	1	-	" " stad. 2; " " ,
		1	-	" " " 3; " " ,
08-22	Lundåkra bäck	1	2 summers	abundant chironomids.

Specimens from my investigations in 1922 and 1923 on the occurrence of glass eels in river outlets in the Sound and off the southern coast of Skåne.

Year	No	Station	Number	mm	Clupea harengus harengus	Gear time	Gear appr. depth
1916					The Sound, herring fry		
04-16	25	Off Valagrund	7	10-16	from this 3 without viscera contents	20 min	- 22 m
			2	13	cpd.r; npl: partly Psc; diat: Sceletonema		
			2	15-16	npl: +; diat: Sceleton., Thalassiosira		
11-08	25	"	12	9- 16	from this without visceral contents		- 13 m
			3	10	npl: +		
			2	11	npl: +; diat: Rhizosolenia hebetata		
			1	12	npl: Psc, Oith		
1922							
05-11		W Bredgrund	1	22	diat: Melosira H		-
11-14	35	N Ven	10	14- 19	from this without vesceral contents		
			1	17	cop: remnants - shells with not digested red and black pigment		
12-17	35	"	1	14	npl: Psc, Tem		- 5 m
			2	18,19	cop. remnants from Psc and Tem; npl: +		
			1	21	cop. remnants: partly Psc and Tem		
1923							
02-28	46	Öretvisten	1	34	cop: 8 Psc + remnants		- 14 m
			1	36	cop: 2 Tem + remnants		
05-10	25	Off Valagrund	1	22	cop. remnants-Psc, Acart; abundant cop-egg	20 min	- 14+22 m
1924							
11-13	34	E H-k	7	10-18	from these 5 without visceral contents		- 30 m
			1	17	cop: remnants: Psc, Tem; cpd; npl		
			1	18	cop: remnants: partly Acart; npl		

Year date	Station	Number	mm	Clupea harengus	Gear
				the Baltic, herring larvae	
1924					
10-14		110	6-16	From 54 investigated 38 had no visceral contents	SB
		2	8	npl: partly Acartia; alg: Aphanizom. threads	
		1	10	npl: partly Acartia; alg: Aphaniz.	
		2	11	npl: partly Acartia;	
		1	12	cop: Acart	
		5	12	npl: Acart, alg: Aphaniz.	
		2	13	cpd; npl: Acart	
		1	14	cpd:r - Acart; npl	
		2	16	cpd; npl: Acart	
1926					
30.10-2.11	S of SW Skåne	64	8-19	from this 32 had no visceral contents	SB
		18	8-13	cop: Acart +; cpd-r; npl: consideration Psc	
		9	14-16	cop: 5 Acart, 3 Tem-j, npl: Acart, Psc, Tem	
		5	17-19	cop: Acart, Psc j; cpd.r - partly Psc	
1927					
06-14-20	Central Baltic	few		larvae of Baltic herring + -r in 7 of 21 stations	

Occurrence: Bohuslän - the Sound - the Baltic - the Bothnian Bay

Spawning: Spring spawning, about April - Autumn spawning, about Oct.

Own material: In the Sound: only 8 in April - May, 33 in Nov.
In the Baltic: 174 in Oct. - the beginning of Nov., a few in June

Year date	No	Station	Number	mm	Sprattus sprattus	Gear time, appr. depth	Ser.
					The Sound pelagic larvae		
1916							
07-17	29	SE Ven	x) 3	10-11	npl: 7 specimen mostly Psc.	-14 m	● 07-19
			3	13-14	cpd.r +, npl: partly Psc		
			1	16	cpd.r; npl.		
			1	18	cop-remnants: partly Oith; cpd + npl +		
07-26	52a	Off Lerhamn	1	11	npl	-25 m	-
08-24	34	E H-k	1	18	cop: 4 Parac; cpd:r	-10 m	●
1917							
08-18	42	N Ven	1	16	cop.r - Tem; npl +	-8-14 m	-
1922							
09-30	46	Öretvisten	1	14	npl: partly Oith	-14 m	●
			2	20,21	cop: 2 Psc, 1 Tem + remnants; cpd		
09-30	42	N Ven	1	11	npl.r; diat: Chaetoc,cells	-16 m	●
1923							
05-10	25	W Valagrund	2	14,15	cop: 1 Acart. longir; npl: +	20 min. -14+22 m	● 05-09
1924							
08-21	34	E H-k	2	18	cop: 2 Psc,j+remnants; cpd +, npl-r	-13-20 m	

x) 18 specimen investigated, of these 10 had no visceral contents

Year date	Number	mm	Sprattus sprattus	Note
			The Baltic, older stages	
1922				
09-15	1	28	cop: Acart, bifilosa + remnants of copepode	no scales
	1	28	cop: Acart. c, Euryt. hirundoides cc; cop-eggs	
	1	30	cop: abundant Acart and Euryt; clad: 3 Podon	scales indicated
	1	30	cop: Acart. bifil. cc, Euryt: cc; cop-eggs	no scales
Tissö, archipelago of Öster-götland	1	30	cop: " " cc, " cc;	"
	1	32	cop: " " " ; clad: 2 Podon	"
	1	33	cop: Acart. bifil. cc, Euryt +; clad: Podon	"
	1	33	cop: " " cc, " +;	"
	1	33	cop: " " cc, " +; clad: 1 Podon	the beginning of scales
	1	35	cop: " " cc, " c; cop:eggs	scales
	1	35	cop: remnants: insignificant; in the intestine a bigger trematod	"

Occurrence: The west coast - the Sound - the Baltic

Spawning: (April) May - July

Own material: pelagic larvae (10-21mm) in the Sound during (May) July - Sept.
older stages in the Baltic 28-35mm in Sept. Acartia and Eurytemora completely dominating in the stomach content, Podon a few specimens. No visible scales in most sprat of 26-33 mm.
Clearly viserable scales in 2 specimen of 35 mm.

Clupea fry. Comments on appendix 39

The Sound

App. 39 Cl. harengeus: This appendix reports 43 examined specimens, 20 with and 23 without intestines content. Length was measured on a much larger sample - 257 specimens - and is given in whole millimetres in the following table.

mm	8	9	10	11	12	13	14	15	16	17	18	19
	3	13	12	3	9	8	6	9	9	1	1	1
	-	3	2	5	1	2	3	3	3	1	2	
	11	15	1	1	3	2	2	1	2	1		
	3	13	1	1	1	3	1	1	2			
	1	2	5	1	3	2	2	2	2	3		
	1	8	8	1	1	2	1	1	2	1		
	1	6	1	-	1	1	2	2				
	1	1	1	-	1	5	3					
					4	-	1					
					1	-	1					
					1	-	2					
					1	-	1					
					2	-	1					
Sum.	21	61	31	12	29	25	26	19	20	9	3	1

The table reveals a distinct maximum of fry 9 mm long, 61 out of a total of 257. A clear decline to 12 specimens 11 mm long follows, and then comes a rise to 29-26 13-14 mm long, c. 20 15-16 mm long, and 9-1 17-19 mm long fry.

App. 39 Appendix 39 also shows most pelagic fry in November- December, c. 70 as against c. 20 in April and May, which implies that autumn spawning is more extensive than spring spawning.

Two older fry, 34 and 36 mm long, probably of autumn spawning specimens, were taken at the end of February.

App. 39 Clupea sprattus fry have been found in samples taken in July, August and September, when herring fry, with one remarkable exception, are lacking.

The Baltic Sea

App. 44 South Baltic, 12-17 May 1922. Both herring and sprat fry were lacking. Liparis dominated with 96 specimens, followed by Ammodytes tobianus with 55 specimens.

App. 45 The Gotland Trench, 2-4 August 1926. Baltic herring fry were lacking. Only four sprat fry were reported.

App. 45 Sundsvall-Landsort Trench-Gulf of Riga and back, 4-20 June 1927. Baltic herring and sprat fry only occasionally.

App. 46 Bottom of page 2. in three 20-minute hauls at a depth of 10 m, 30 October-2 November 1926, a total of 64 herring fry 8-15 mm long were taken south of SW Skåne.

App. 47 From the expedition with the Skagerak: Sundsvall-Gulf of Riga and back was reported, among other things, the occurrence of Baltic herring and sprat fry. Sprat eggs were found in great quantities at some stations in the central Baltic.

App. 39 The Sound. Contents of stomachs:

Copepods + remains: in fry 10 mm in size and larger were found: Psc. Tem, Acartia, Parac, Oith; Copepods + remains: nauplii: mainly Psc and Acartia.

Silicon algae were found rather abundantly:

Biddulphia sp.	H	Rhizosolenia	+
Chaetoceras cells	C	Sceletonema	H
Melosira parts	C	Thallassiosira	H

Year date	No	Station	Number	mm	Rhinonemus cimbrius	Gear, time, ca depth	Ser.
					The Sound Pelagic larvae		
1916							
06-27	52	W Kullen	1	4	npl: Oith	SB 30 min - 25m	-
			2	4	npl: Oith, Psc; cpd-r		
			1	5	npl: 11 specimen Acart, Oith, Psc		
			1	6	npl: partly Oith; cpd: partly Oith		
08-05	29	Borstah., inner	1	6	npl: 16 specimen Acart, Oith, Psc, Tem	15 min - 20m	-
			1	6	npl: mostly Oith; cpd.r		
08-24	34	E H-k, Ven	4	3	npl: 5 Oith, 2 Psc	15 min - 10m	-
			8	4	npl: 11 Oith, 2 Parac		
09-23	34	"	5	5	cpd.r; npl: Acart, Oith, Psc	60 min - 10-13-18m	•
			1	6	cop: 1 Acart-j, 4 Parac-j		
			1	8	cop: 1 Ac. longiremis; 7 Oith, 1 Parac		
09-30	34	"	3	7	cpd: partly Psc, Parac; npl: Acart, Oith, Psc; clad: 1 Evad	- 10m	-
1917							
08-18	-	E Ven	2	4	npl: Acart, Oith, Psc, Centrop, Tem	60 min - 8-13m	-
1922							
04-30			1	5	cpd.r; npl: Acart, Psc	20 min - 17m	-
			1	6	npl: 1 Oith, 1 Psc, 1 Tem		
09-30 10-03	46	Off Sofiero	2	5,6	cpd r; npl: partly Oith	-	-
~~03-10~~	25	W Valagr.	1	4	york sack not completely resorbed; no stomach content	- 10m	•
			1	4	npl: 1 Acart, 7 Oith		
			1	5	npl: partly Oith		
			1	6	npl: 6 specimen Acart, Oith; 3 cpd: Acart, Oith		
			1	6	cop: 1 Ac. longir., npl: Oith, Psc		
			1	7	cop: 1 Parac; 11 npl: mostly Acart		

Year date	No	Station	Number	mm	Rhinonemus cimbrius	Gear, time, ca depth
					The Sound Pelagic larvae	
1924						SB
08-21		NE Ven	1	4	york sack not compl.resorb. No stomach cont.	30 min - 13 and 20m
			6	4	naupl: 4 Oith, 1 Psc, 1 Centrop	
			1	4	npl: 1 Oith; 1 Cpd	
			3	5	npl: Oith, Psc, 1 Centrop	
			2	6	cop: 1 Oith; npl: Acart, Oith	
			3	7	cop: 1 Oith: cpd: +, npl: Psc, 1 Tem clad: 1 Evadne	
			4	8	cop: 3 Acart. longir, 1 Psc, 1 Tem; cpd-r, npl: single, clad: 3 Evad	
1925						
08-20		Off Ven	1	9	cop: 1 Acart + cop.r; clad: 6 Podon	30 min - 8 and 20m

Occurrence: Bohuslän - the Sound and the Baltic

Spawning: Feb. - July

Own material: Pelagic larvae were more abundant at the end of Aug. 1916 and 1924, otherwise less in number, as in the end of June 1916.

Pelagic eggs were abundant at the end of Aug. 1916 and in Sept. 1922. Additionally 14 eggs were noted in Okt. 1922, otherwise only a few

Year date	No	Station	Number	mm	Ciliata mustela	Gear, ca depth	Ser.
1922							
10-23	25	W Valagr.	1	5	npl: Oith; Psc; cop:eggs	SB - 10m	•

Occurrence: The west coast down to the northern Sound - the Belt

Spawning: Jan. - May

Own material: Occurrence of tiny larvae in Oct. points to spawning even later than May

Year date	No	Station	Number	mm	Trachinus draco	Gear, time, depth	Ser.
1916						SB	
08-24	34	Ven	1	6.5	cop: 1 Parac, cop.r, cpd	- 10m	●
09-29		E H-k	1	7	cop: 1 Parac, cop.r, cpd-r.	- 14m	●
1925							
08-20	"	"	2	7	cop: 2 Parac. j, 1 Psc-j, cpd	15 min - 8m	-
"	"	"	1	11.5	cop: 4 Parac, 1 Psc, cop-r		
"	"	"	1	8	cop: 1 Parac, cpd, npl: 11 Oith, 6 Acart, 1 Tem	- 20m	

Occurrence: Skagerrak, Kattegat, the Sound +, in the southern Baltic few

Spawning: 15 June - July

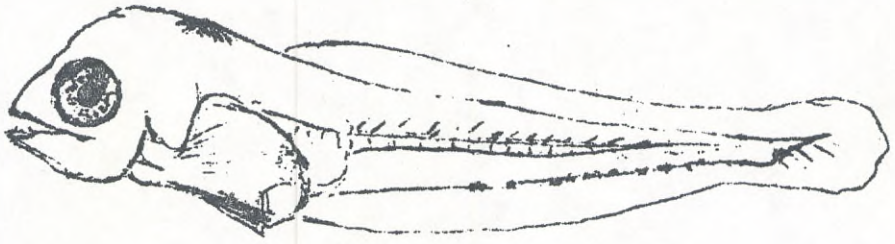
Own material: pelagic larvae in the Sound: Aug. - Sept.

					Scomber scombrus		
1917							
07-13-14	34	E H-k	2	5	cop-eggs, npl	- 18m	●
			3	6	cop: 1 Parac, 1 Tem-j; npl +		
			1	6	2 npl; diat: Thalassiothrix		
			3	7	cop-eggs, cpd; partly r, npl: partly Psc		
			2	8	npl: 3 Tem, 2 Psc		
			1	11	cop-r: partly Pseudocalanus		
			1	14	cop-r: partly Psc, 1 mackerel eggs		

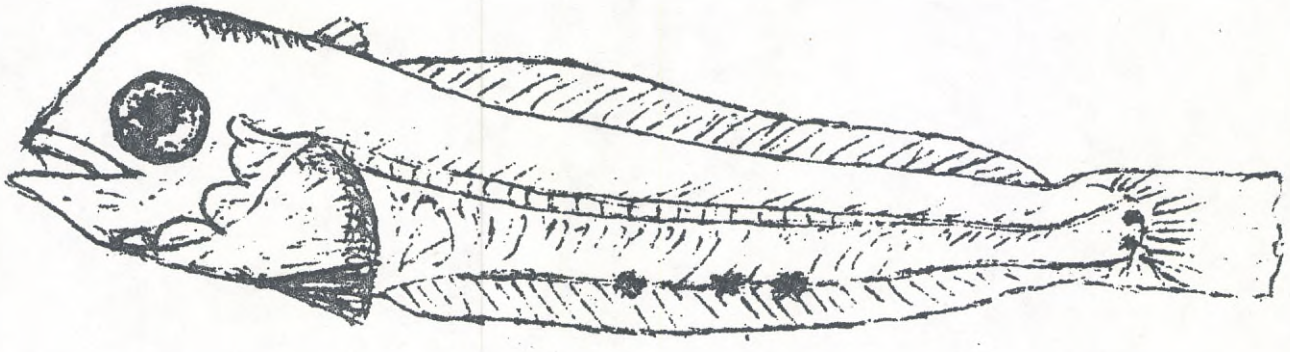
Occurrence: Skagerrak, Kattegatt, the Sound - the southern Baltic more occasional

Spawning: 15 May - July

Own material: 26 eggs 13-14 July , off Ven, at the same time 14 pelagic larvae



7 mm



11 mm

Trachinus draco. The Sound, 1925-08-20

Year date	No	Station	Number	mm	Eutrigla gurnardus	Gear, ca depth	Ser.
1916						SB	
08-24			1	6	cop: 2 Parac, npl: partly Acart	- 10m	• 08-25
1922							
08-14	34	Ven, E H-k	1	5	cop: 1 Tem.j, 3 cpd: shell, partly Psc		• 08-15
09-30	46	Öretvisten	1	6	Empty yolk sack not resorbed	- 14m	•
10-03	25	Off Valagr.	1	8	Empty	- 10m	•
			1	15	cop: 14 Parac, 5 Psc, + cop. remnants		
1924							
08-27	34	E H-k	1	10	cop: 4 Parac.j, 1 Psc	- 20m	-

Occurrence: Skagerrak, Kattegat, the Sound; the southern Baltic

Spawning: June - Sept.

Own material: eggs were found at 9 occasions in July - Nov., maximum 7 the 23.9,otherwise 1-3 eggs.

Chirolophis ascanii

Year date	No	Station	Number	mm		Gear, ca depth	Ser.
1923							
03-18	33	Off Bäckvik	1	12	empty yolk sack not resorbed	- 8m	•
			1	13	empty " " " completely resorbed		

Occurrence: according to Otterström, Skagerrak, Kattegat, the Belt and Spawning: Oct. - Nov.
according to Ehrenbaum the larvae are hatching at the length of 10-12 mm.

Own material: the two pelagic larvae in March with not resorbed yolk point to spawning even in Jan.

Year date	No	Station	Number	mm	Anarhichas lupus lupus	Gear, time, depth
1923						
03-18	34	Off H-vik, Ven	1	25	cop: 2 Tem, 1 Psc; 2 Ostrac yolk sack not completely resorbed	SB - 6m

Occurrence: Skagerrak, Kattegat, a few in the Sound (a few in the southern Baltic)

Spawning: Nov. - Jan.

Own material: Larva not mentioned before from the Sound. Pelagic occurrence is indicated by the larva has been caught in about 6m above 40 m depth and that pelagic copepodalarva been found in the intestine.

C^{o} = 1.8 in 5m
S^{o}/oo = 20.4 in 5m

Amphioxus lanceolatus

Year date	No	Station	Number	mm	Gear, time, depth
1916					
08-24	33-34	Off Ven	3	7-8	- about 16m
08-29	34	"	1	7	- " 13m

Occurrence: Bohuslän in relatively deep sand bottom

Own material: 4 pelagic larvae off Ven in about 15 m depth. Not mentioned before from the Sound.

Remark: Additionally 22 Phoronis-l. were noted in Aug.-Sep.

08-24 C^{o} = 14.7 in 15m
S^{o}/oo = 24.4 " "

08-29 C^{o} = 13.7 " "
S^{o}/oo = 26.4 " "

Year date	Station	Fishlarve. mostly 20 min hauls with SB	Number	mm	Gear, ca depth
		The southern Baltic - pelagic larvae			
1922					SB
05-12	the lightship	Liparis liparis	1	7	20 min - 10m
	Trelleborg roads	Ammod. tobianus	5	10-15	
05-13	Off Kullagrund	Ammod. tobianus	1	7	" - 20m
"	Off Smyge	" "	2	7-8	-
"	W Bornholm	Ammod. tobianus	4	13-18	" - 50m
		Liparis liparis	2	7,10	
		Pleuronect. platessa	2	8,10	
05-14	S Hanö	Ammod. tobianus	9	9-17	" - 25-27m
	more than	Liparis liparis	6	3-7	
	36m depth	Pl. flesus	2	7	
		Pl. platessa	1	11	
"	S Hanö	Am. tobianus	1	10	" - 5m
		Pl. platessa	1	9	
"	S Hällevik	Liparis liparis	30	6-8	" - 13-14m
05-16	Lister H in W-S	Am. tobianus	1	14	" - 22m
	Hanö light	Lip. liparis	3	6-8	
	in SW $\frac{1}{2}$ W	Pl. platessa	2	8	
"	"	Am. tobianus	9	10-18	" - 11m
		Lip. liparis	19	6-10	
05-17	Utklippan in SE	Am. tobianus	12	12-20	40 min - 25m
	Kungsh. in NE-N	Lip. liparis	14	6-8	
"	"	Am. tobianus	9	9-19	40 min - 14m
		Lip. liparis	21	6-9	

Fish larvae in the Gotland Deep, 2-4 Aug. 1926

SB ca depth in meters	Cod	Serpent blenny	Sucking-fish	Sprat	Flounder	Smooth sand eel	Goby	Note
0-3	-	-	-	-	-	-	-	1. Number in different depth
0-5	-	-	-	1	-	-	-	
20	1	-	-	1	-	1	1	2. Stomach content: see the different species
40	11	-	-	-	2	-	-	
50	12	-	1	-	-	-	-	
"	47	-	-	1	-	-	-	
"	11	-	1	1	-	-	-	
100	6	-	1	-	-	-	-	
"	-	1	1	-	-	-	-	
Sum	88	1	4	4	2	1	1	

Fish larvae from the "Skagerak expedition 4-6-20.6 1927
Sundsvall - Landsort Deep - the Bay of Riga - and back

SB ca depth in meters	Cod	Sucking fish	European sculpin	Four-spined sculpin	Butter fish	Flounder	Herring+ Sprat	Tobis	C = estimated up to at least 100
3	-	-	-	-	-	-	r	+	H = less abundant
3	-	+	2	1	-	C	+	-	
rel. superficial	-	-	-	-	-	-	-	C	+ - r single
10	-	-	-	-	-	about 20	-	-	Remarks
15	-	-	-	-	-	C	r	-	
25	-	-	-	-	1	C	H[1)]	-	1) Sprat
35	15	1	-	1	-	-	-	-	
50	C	-	-	-	-	10	+	-	
50	20	-	-	-	-	r	+	-	
50	C	-	-	-	-	-	r	-	
70	2	-	-	-	-	-	-	-	about 1 litre Lim-
75	-	-	-	3	-	-	-	-	nocal. + Mysis
75	-	-	-	2	-	-	-	-	mixta.
125	C	1	-	-	-	-	-	-	6 Halith, 6 Sagitta

E Gotland
2-4 Aug. 1926

1926 date	time ca	Station Lat.	Long.	Fish larvae	Number	mm	Plankton: Limno-calanus	Pscal.	Centro-pag	Temona	Acartia	Others	Gear, ca depth
													Ring net
08-02	00.00	56° 38'	20° 34'	Gobius sp	1	-	-	+	H	+	C	-	55-0 m
		"	"	Lip. liparis	1	-	-	+	+	-	+	-	
"		56° 41.5'	20° 7'	Cod	3	5-6	+	H	+	+	C	-	140-0 m
08-03	00.00	57° 44.5'	19° 35.5'	Cod	2	6-6	-	H	H	-	+	-	60-0 m
"	00.30	"	"	-	-	-	-	C	C	+	H	-	25-0 m
"	09.10	"	"	Cod	1	5	-	+	+	r	H	-	25-0 m
"	09.15	"	"	Cod	2	5	-	H	C	+	H	-	60-0 m
"	09.40	"	"	Cod	3	5-6	-	H	H	+	H	Cyanea	100-0 m
"	09.50	"	"	Cod	6	4-5	-	H	+	-	+	-	150-0 m
"	11.30	"	"	Cod	13	4-6	+	H	+	+	+	-	200-0 m
"	12.00	"	"	Cod	2	4	-	H	-	-	+	-	100-0 m
"	22.00	"	"	Cod	1	7	-	H	H	+	H	-	60-0 m
"	22.30	"	"	Cod	4	4-5	-	H	H	+	H	-	80-0 m
													SB
08-02	22.15	57° 44.5'	19° 35.5'	L. liparis	1	12						-	30 min - 50 m
				Cod	12	5-10	-	C	H	+	H		30 " - 100 "
	22.00	"	"	L. liparis	10	10						Fritil-laria	35 " - 100 "
				Cod	6	6-10	+	C	+	+	H		35 " - 100 "
08-03	14.40	"	"	L. liparis	1	14	-					Halitho-lus	30 " - 100 "
				Lumpenus	1	17						Sagitta	
"	15.30	"	"	Sprat	1	14	-						30 " - 50 "
				Cod	47	5-10	-	+	+	H	H	-	30 " - 50 "
"	22.05	"	"	L. liparis	1	8	-	-	C	+	+	-	30 " - 50 "
				Sprat	1	16							
				Cod	11	4-10	+	C	+	-	+	-	30 " - 50 "
"	23.45	"	"	Sprat	1	20	-					-	30 " - 0-5 m

E Gotland
2-4 Aug. 1926

1926 date	time ca	Station Lat.	Station Long.	Fish larvae	Number	mm	Plankton: Limno-calanus	Pscal.	Centro-pag	Temona	Acartia	Others	Gear, ca depth
08-03	23.45	57° 44'	19° 35'	Pl. flesus	3	9	-	-	C	+	H	Evadne	SB 30 min - 0-5 m
08-04	01.45	57° 47'	19° 26.7'	No fishlarvae	-	-							30 " - 0-3 "
"	02.35	57° 51'	19° 28.5'	Ammodytes	1	-	-	-	C	+	C		30 " - 20 "
				Onos sp.	1	-							
				Gobius sp.	1	-							
				Sprat	1	-							
				Cod	1	-							
"	07.30	57° 47'	19° 26'	Pl. flesus	2	7, 7.5	-	+	C	+	C		30 " - 40 "
				Cod	11	5-10							
"	08.15	"	"	No fishlarve									30 " - 0-3 "

Remarks: C = frequent occurrence, H = less abundant, + - r = a few

Own material: pelagic fish eggs were found in several samples from the Gotland Deep but were not noted.
Fritillaria +, Halitholus +, Sagitta H were found in samples from the Gotland Deep. Also one small Cyanea.

The Baltic S and SW of Skåne in October - November 1926

1926	Station	Fish larvae	Number	mm	Gear, time, ca depth
10-30	Stevn's Klint 6°N	Cottus scorpius	1	42	triangular drag
"	Off Klintholm	Herring	21	8-15	SB 20 min - 10m
"	Stevn's KLint 6°N	Herring	31	8-15	" 20 " - 10m
11-02	4° S Trelleborg	Herring	12	9-14	" 20 " - 10m

The Baltic, June 1927. R/V "Skagerack".

SB net was towed with 2 knots

Date	Time	Station	Fish eggs, fish larvae	Gear, ca depth
06-04	10.15-10.30	62° 24' 18° 16'	3 Cottus quadricornis-larvae about 1 litre Limnocalanus	SB - 75m
06-04	03.00-03.15	61° 54' 17° 46'	2 C. quadric. larvae	SB - 75m
06-08	11.35-11.50	61° 30' 20° 26'	Frequent with Smooth sand eel-larvae, 2 C. scorpius l., 1 C. quadric. l	SB relatively on the surface
06-13	23.45-00.05	58° 48,5' 18° 21,5'	Frequent with Mysis relicta + M. mixta Pontoporeia femorata (♂)	SB - 50m
06-14	08.00-08.30	57° 34' 20° 50'	Clupea-l. +, cod-l. +, flounder-l. H, Liparis-l. +	SB - 30m
06-15	08.01-08.31	58° 10,5' 19° 48'	about 20 flounder-l.	SB - 10m
"	09.20-09.50	"	Fish eggs: about 100 - sprat CC, cod + " larvae: 1 C. quadric., 1 Liparis, 15 cod	SB - 35m
"	23.14-23.44	57° 52' 20° 45'	relatively insignificant eggs - Cl. sprattus, larvae: 4 flounder, 1 cod	SB - 25m
15-16	23.57-00.27	"	Frequent(newly-hatched) flounder-l., Sprat -l. H	-
06-15	08.31-09.01	58° 10,5' 19° 48'	1 Liparis, frequent cod-l. C, 6 Halitholus, 6 Sagitta, 1 Mysis mixta	SB - 125m
06-16	04.05-04.35	57° 38' 21° 28'	Frequent flounder-l. C, Sprat -eggs about 200	SB - 15m
"	08.25-08.55	57° 49' 22° 17'	Sprat -eggs - about 20 Flounder-l. +; Clupea-l. +	SB - 15m
"	09.30-10.00	"	Larvae + of Ammodytis, Clupea, Liparis	SB - 3m
"	12.10-12.40	58° 1,5' 22° 40'	Sprat -eggs +,	-
06-18	10.43-11.13	57° 51' 23° 24'	1 Gast. aculeatus - 48mm, 3 Liparis-l., Limnocal. +	SB - 15m
"	23.20-23.50	57° 52' 21° 45'	2 cod larvae Mysis CC, most M. mixta	SB - 70m
06-19	08.35-09.05	57° 34' 20° 50'	Frequent flounder-l. about 100; Clupea l., r.	SB - 3m
"	09.10-09.40	57° 34' 20° 50'	Frequent flounder-l. about 100, Clupea-r, Sprat -eggs-C	SB - 15m
"	17.40-18.10	57° 30' 20° 0'	Flounder-l., r; Clupea-l - +, cod-l - C; about 200 eggs - mostly sprat	SB - 50m

The Baltic, June 1927. R/V "Skagerack"

SB net was towed with 2 knots

Date	Time	Station	Fish eggs, fish larvae etc.	Gear, ca depth
06-09	11.28- 11.58	57° 31' 20° 16'	10 flounder-l.; 20 cod l., Clupea l. r.	SB - 50
06-20	00.05-00.35	57° 7,5' 18° 47'	Larvae: 1 Centronotus, 1 Cottus, 1 Liparis, cod +, small Mysis-cc	SB - 20m
"	02.28-02.58	57° 1,5' 20° 6'	About 200 eggs: mostly C. sprat, Clupea-l +, frequent cod C	SB - 50m

Remark: Corresponding hydrographical series in the journals of the R/V "Skagerak"

DECAPOD - LARVAE

The Sound

The Sound — Decapodlarvae

Year	Date	Station	Number	mm	Stage	Gear, appr. depth
Palaemon fabricii						
1916	07-16	52 a	7	-	stage II-IV	S.B. 20m
	09-06	28	4	-	stage IV-V	S.B. 10m
1917	07-18	42	C	-	-	S.B. 12m
1919	07-27	33-34	20	-	stage I-IV	S.B. 10m
Palaemon montagui, ad. up to and including Råå						
1916	04	25	1	-	-	S.B. 20m
	07-16	52 a	4	-	stage III-IV	S.B. 20m
	09-06	28	5	4-7	stage III-V	S.B. 10m
Pandalus borealis, ad. in the Skagerrak						
1916	08-29	34	1	7	-	S.B. 12m
	09-06	28	1	7	stage II	S.B. 10m
Crangon allmani, ad. until Ven						
1916	08-05+24	29, 34	7	3-7	-	-
	08-29	34	CC	3-9	-	S.B. 12m
	07-16	52 a	C	-	stage I-IV	S.B. 20m
	09-06+30	28, 34, 42	C	3-7	stage I-IV	S.B. 10-12m
1919	07-27	33-34	C	-	stage I-IV	S.B. 10-12m
Crangon vulgaris, common in the Sound						
1916	07-18	42	2	-	-	S.B. 12m
	08-29	34	6	4-6	-	S.B. 12m
	09-06	28	7	4-6	stage II-IV	-
	09-30	42	C	4-7	-	S.B. 10m
1919	07-27	33-34	3	-	-	S.B. 10m
Hippolyte gaimardi, up to and in the Lundåkrabukt.						
1916	04-16	25	1	-	stage I	S.B. 20m
	08-24	33-34	1	3	Zoea I	S.B. 10m
	08-29	34	2	2.5,7	stage I, IV	S.B. 20m

Year	Date	Station	Number	mm	Stage	Gear, appr. depth
		Eupagurus bernhardus, common until Ven				
1916	09-23	34	8	-	-	S.B. 12m
	04-16	25	2	-	-	S.B. 20m
	07-16	52 a	C	-	stage I-IV	S.B. 20m
	08-05	29	5	-	-	-
	08-24	23-24	6	-	stage II-IV	-
	09-06	28	C	-	stage I-IV	S.B. 10m
1917	07-18	42	C	-	stage II-IV	S.B. 12m
1926	11-04	42	3	-	Zoea	R.net 5-10m
1922	05-13	W Bornholm	1	-	stage II	S.B. 35m
		Anapagurus chiroacanthus				
1916	08-24	23-24	3	-	stage II	S.B. 10m
	08-05	29	1	-	stage II	-
1922	11-14	42	1	-	last Zoea stage	R.net
		Gebia stellata, Mont. ad. + in the Skagerrak and Kattegat				
1915	09-11	32	8	5-6	Zoea: III-IV	trawl of Östergren
1916	08-29	42	2	6	postlarval stage	S.B. 12m
	09-06	28	2	5-6	Zoea: IV	S.B. 5m
	09-30	42	4	5	Zoea: IV	S.B. 10m
1917	08-18	42	8	5-6	Zoea: IV	S.B. 10m
		Pontophilus spinosus, Leach. Skagerrak - N Kattegat				
1916	07-18	52 a	1	10.5	-	S.B. 20m
	10	48	1	10	Zoea	-
		Galathea sp.				
1916	07-16	52 a	1	7	Zoea, last stage	S.B. 20m
	08-05	33-34	1	7	Zoea	S.B. 10m
	09-23	34	4	-	-	S.B. 23m
1926	11-04	42	2	-	Zoea	R.net 10m
		Carcinas maenas, common to 10 (20) m				
1916	07-16	52 a	C	-	Zoea-stage	S.B. 20m
	08-24	33-34	5	-	2 Zoea, 3 megal.	S.B. 10m
	09-06	28	C	-	Zoea: I-II	S.B. 10m
	09-23	34	H	-	megalopa	S.B. 12m
1917	07-18	42	C	-	Zoea, 1 megal.	S.B. 12m
1919	07-27	33-34	2	-	1 Zoea, 1 megal.	S.B. 10m

Year	Date	Station	Number	mm	Stage	Gear, appr. depth
		Hyas araneus				
1916	04-16	25	2	-	Zoea	S.B. 20m
1922	05-13	W Bornholm	1	-	Zoea	S.B. 25-30m
		Portumus depurator, common				
1916	07-16	52 a	2	-	Zoea	S.B. 13m
	08-24	33-34	5	-	-	-
	09-06	28	C	-	Zoea: I-II	S.B. 10m
	09-23	34	H	-	Zoea stage	S.B. 13m
		Xantho hydrophilus, Herbst				
1916	09-30	42	1	5	megalopa	S.B. 10m
		Pandalina braevirostris				
1916	08-05	29	1	3	-	-
	08-24	33-34	1	3	Zoea: I	S.B. 10m
	09-06	28	4	3-5	stage II-VI	S.B. 10m
		Chaeropilus nanus				
1916	08-29	34	1	3	Zoea	S.B. 12m
	09-06	28	2	-	Zoea: II	S.B. 10m
	09-30	42	4	2.5-4	Zoea stage	S.B. 10m
		Porcellana longirostris, Perinaut				
1916	08-18	42	3	ca 8	Zoea	S.B. 10m
	08-24	42	1	10	last Zoea	S.B. 10m
	08-29	42	1	10	last Zoea	S.B. 12m
	09-06	28	1	10	Zoea stage	S.B. 10m
	09-30	42	6	9-10	Zoea stage	S.B. 10m
		Calocaris macandreae, Bill.				
1916	08-29	42	12	6-7	Mysis stage II	S.B. 12m
	09-06	28	1	6.5	Mys. stage II	S.B. 10m
	09-30	42	3	6	Mys. stage II	S.B. 10m
1917	07-18	42	1	5	Mys. stage II (Sars)	S.B. 10m

S.B. = Scherbrutnetz, as a rule 20 min. Haul at depth indicated.
R.net = Ring net (big)
Station 48-52 = The area off Hälsingborg-Kullaberg
" 33-42 = NW and N Ven
" 28-25 = S Ven

HYDROGRAPHICAL SERIES
from the Sound and the Baltic
APRIL 1916 - AUGUST 1925

The Sound — Hydrographical series

Year date	Station No		Sample m	C°	S‰	Remarks
1916						
04-30	25	W Valagrund	0	6.25	7.0	
			5	4.6	7.0	
			10	4.0	27.1	
			15	4.4	34.1	
			20	4.4	34.9	
			25	4.4	35.0	
			30	4.4	34.1	
			40	4.6	34.3	
07-19	34	E Husvik on Ven	0	14.9	9.6	
			5	14.9	10.5	
	B 40		10	11.5	22.4	
			15	5.7	33.4	
			20	5.0	33.3	
			25	4.9	33.8	
			30	4.9	33.5	
			35	4.85	33.7	
			39	5.5	33.4	
07-17	28	Borstahusen, outer				touched the bottom
07-21	29	" , inner				
07-26	52 a	Off Mölle				strong current to the north
07-27	52 b	" "				
08-05	29	Borstahusen, inner				touched the bottom
08-06	5	Pinhättan	0	16.5	18.1	after 3-4 days gale
			5	15.95	18.4	
			10	15.85	18.0	
			15	15.85	18.2	
			20	15.65	18.6	
08-15	25	W Valagrund	0	15.5	8.2	
			5	15.5	8.3	
			10	15.55	8.4	
			15	16.35	17.3	
			20	8.1	32.6	
			25	7.7	32.6	
			30	7.6	33.0	
			35	7.6	33.0	
			40	7.65	32.8	

Year date	Station No		Sample m	C°	S‰	Remarks
1916						
08-23	43 a	Off Sneckersten	0	16.2	9.4	
			5	16.2	14.6	
			10	16.45	18.6	
			15	14.45	24.1	
			20	11.15	30.4	
			23	9.85	31.1	
08-16	1 a	Outer Lommabukten	0	16.1	8.1	
			5	15.7	8.4	
			10	15.9	8.5	
			15	15.9	17.8	
			17	15.7	18.0	
08-24	33-34	E Husvik on Ven	0	16.1	10.9	
			5	16.0	11.6	
			10	15.5	21.5	
			15	14.7	24.4	
			20	8.95	32.1	
			25	8.55	32.6	
			30	8.5	32.8	
			35	8.35	32.9	
			40	8.4	33.1	
08-29	34	E Husvik	0	15.9	9.5	
			5	15.85	9.5	
			10	15.7	11.4	
			15	13.5	26.4	
			17.5	10.4	30.9	
			20	8.9	32.4	
			25	8.6	32.9	
			30	8.6	32.9	
			35	8.45	33.0	
09-23	34	"	0	12.5	11.1	
			5	12.5	11.3	
			10	12.7	11.8	
			15	13.05	18.1	
			20	9.25	32.3	
			25	8.95	32.5	
			30	9.0	32.6	
11-07	34	"	0	8.95	12.1	
			5	8.9	12.4	
			10	9.2	16.0	
			15	10.4	31.3	
			20	10.4	31.6	
			25	10.45	31.7	
			30	10.55	31.6	
			35	10.55	31.9	

Year date	Station No		Sample m	C°	S‰	Remarks
1916						
12-19	25	W Valagrundet	0	3.6	10.0	
			5	3.5	10.8	
			10	6.3	22.1	
			15	8.9	31.8	
			20	9.0	32.7	
			25	9.1	32.7	
			30	9.25	32.9	
			40	9.25	32.9	
1917						
07-13	34	E Husvik on Ven	0	18.6	6.7	
			5	17.7	8.6	
			10	17.7	9.25	
			15	11.4	21.0	
			20	7.5	25.4	
			30	7.1	25.4	
07-18	7	NW Pinhättan	0	18.5	6.3	
			5	18.4	6.9	
			10	6.8	24.5	
			15	6.8	24.9	
1919						
07-28	5	Pinhättan	0	15.1		
			5	15.1		
			10	14.7		
			16	11.5		
			20	6.3		
09-05	25	W Valagrundet	0	14.1	9.15	
			5	12.5	9.2	
			10	12.8	9.7	
			15	10.95	30.1	
			20	9.7	32.4	
			25	9.8	32.4	
			36.5	9.35	33.1	
1920						
07-12	34	E Husvik	0	17.5	8.97	
			5	17.2	9.08	
			10	17.2	16.58	
			15	11.9	23.64	
			20	5.1	31.34	
			25	4.9	33.30	
			30	5.0	33.22	
			35	5.2	33.95	

Year date	Station No		Sample m	C°	S‰	Remarks
1920						
08-17	34	E Husvik	0	15.3	13.50	
			5	15.2	14.60	
			10	15.0	14.79	
			15	14.5	19.61	
			20	8.9	29.93	
			25	6.0	32.74	
			30	5.7	33.70	
09-28	25	Off the north part of Valagrund	0	12.5	9.02	
			5		8.86	
			10	12.5	15.10	
			15	8.8	31.36	
			20	9.65	32.05	
			25		32.37	
			30		32.47	
1921						
03-16	7	W Pinhättan	0	3.3	9.33	
			5	2.9	9.43	
			10	2.5	22.36	
			15	3.9	28.24	
			20	3.6	31.42	
05-26	7	" "	0	13.7	8.21	
			10	14.3	11.60	
			15	8.9	31.87	
08-18	25	Off Valagrundet	0	14.5	11.7	
			5	14.7	11.8	
			10	14.7	12.7	
			15	14.7	12.7	
			20	15.1	22.8	
			25	14.2	24.6	
			30	10.3	25.7	
			35	10.2	32.3	
08-19	5	Pinhättan	0	14.5	9.7	
			5	14.2	9.7	
			10	14.6	9.9	
			15	14.8	21.4	
			20	14.3	23.8	
			24	11.8	31.0	

Year date	Station No		Sample m	C°	S‰	Remarks
1922						
05-06	34 a	Haken on Ven	0	6.7	14.16	
			5	6.6	15.33	
			10	6.1	22.65	
			15	6.1	33.73	
			20	6.2	33.86	
			25	6.2	33.93	
			30	6.2	33.96	
			36	6.2	33.95	

The Sound - The Baltic

Year date	Station No		Sample m	C°	S‰	O_2 ml/l	O_2 %	Remarks
1922								
05-08	25	Off Valagrundet	0	8.2	14.87	7.80	98	
			5	7.9	15.79	7.24	90	
			10	5.8	28.39	7.39	85	
			15	6.1	33.57	6.06	70	
			20	6.1	33.82	5.61	65	
			30	6.1	33.96	5.38	61	
			40	6.1	33.98	5.19	59	
			44	6.1	34.05	5.21	60	
05-11		W Bredgrund	0	7.5	19.00	7.30	88	After 3 days of gale
			5	7.4	19.42	7.36	88	
		Off Klagshamn	11	7.2	21.48	7.24	86	
05-12		"Trelleborgs redd"	0	5.4	7.50	8.36	97	
			5	6.0	7.70	8.34	99	
			9	6.0	7.74	8.45	100	
05-12		Off "Kullagrundet" between Gislöf and Smyge	0	5.2	7.52	8.48	98	
			5	5.1	7.52	8.47	98	
			10	4.9	7.54	8.52	99	
			15	4.6	7.56	8.57	99	
			20	4.3	7.64	8.57	97	
			29	2.3	8.50	8.83	96	

Year date	Station No	Sample m	C°	S‰	O2 ml/l	O2 %
1922						
05-13	S Baltic w Bornholm B.d. -59 m	0	4.5	7.32	8.75	101
		10	4.3	7.34	8.75	99
		20	3.9	7.35	8.85	100
		25	3.4	7.50	8.82	97
		30	2.6	7.96	8.63	95
		40	2.0	8.22	8.38	91
		50	1.7	10.55	8.03	88
		58	1.5	13.03	7.77	86
05-14	S Hanö B.d. -36 m	0	5.2	7.09	8.53	99
		10	5.1	7.11	-	-
		20	4.2	7.14	8.81	100
		30	3.4	7.27	-	-
		35	2.5	7.61	8.59	95
05-14	S Hällevik B.d. -25 m	0	5.9	6.92	8.43	100
		10	5.8	6.93	-	-
		20	5.2	6.93	-	-
		24	4.9	7.07	8.41	97
05-16	Lister huvud WSW Hanö B.d.-35,5 m	0	5.8	7.03	8.40	100
		10	5.6	7.03	-	-
		20	4.8	7.05	-	-
		30	2.8	7.73	-	-
		35	2.0	7.85	8.52	91
05-17	Utklippan lightskip B.d.-41 m	0	6.0	7.09	8.44	100
		10	5.1	7.12	-	-
		20	5.0	7.18	8.49	98
		30	3.0	7.52	-	-
		40	2.8	7.52	8.66	95
05-19	Kalmar sound N "Jungfrun" B.d.-42 m	0	6.0	6.83	8.38	99
		10	5.1	6.87	-	-
		20	4.0	6.85	-	-
		30	3.9	6.87	-	-
		41	3.4	6.92	8.55	94
05-20	N Öland Spårö båk 10 min. N W B.d.-74 m	0	5.9	6.82	8.75	104
		10	3.8	6.83	-	-
		20	3.7	6.93	-	-
		30	3.2	6.94	-	-
		40	2.7	6.96	9.21	102
		50	2.4	6.98	9.04	97
		60	3.6	9.03	3.06	35
		73	4.3	9.61	1.46	17

Year date	No	Station	Sample m	C°	S‰	O2 ml/l	O2 %	Remarks
1922 08-15	34	E Husvik on Ven	0	15.3	9.52			
			5	15.1	9.47			
			8	15.1	9.79			
			10	15.7	18.67			
			13	15.7	19.70			
			15	10.1	31.84			
			20	8.3	32.32			
			25	7.8	32.57			
			31	7.9	32.63			
			37	7.8	32.90			
08-31	33-34	Off Hakens lightship on Ven	0	14.2	9.24			
			10	14.5	10.03			
			15	9.6	30.86			
			20	8.7	32.20			
			25	8.3	32.60			
09-27	9 a	Off Malmö B.d.-17 m	0	11.4	9.05	7.10	95	
			5	11.7	9.05	-	-	
			10	11.8	9.23	7.38	97	
			16.5	12.4	16.26	5.83	78	
09-29	39	SW Råå B.d.-30,5 m	0	11.3	9.69	6.87	91	
			5	11.3	9.68	6.92	91	
			10	11.4	9.68	6.88	91	
			15	12.1	16.28	6.46	88	
			20	11.4	27.12	4.92	64	
			25	10.0	32.88	3.20	40	
			30	10.0	32.89	3.24	40	
09-30	46	Öretvisten-Sofiero	0	11.2	9.08	6.90	87	
			10	11.5	10.55	6.74	85	
			15	10.0	32.59	3.25	40	
			20	10.1	32.95	3.24	40	
			30	10.0	33.09	3.28	42	
			40	10.0	33.13	3.12	39	
10-03	25	W Valagrundet	0	11.0	8.78	6.96	88	
			10	11.0	9.03	6.96	88	
			15	11.1	31.73	3.66	45	
			20	10.6	32.80	3.40	43	
			30	10.4	32.95	3.24	41	
			40	10.3	32.99	3.12	39	
			47	10.2	33.09	3.24	41	

Year date	No	Station	Sample m	C°	S‰	O_2 ml/l	O_2 %	Remarks
1922								
11-14	33	Off Hakens light-ship on Ven	0	5.0	10.19			
			5	5.8	10.33			
			10	8.2	25.72			
			15	10.8	-			
			20	11.8	33.21			
			30	12.0	33.42			
12-17	33-34	Off Husvik	0	3.7	17.72	7.90	96	
			5	4.1	22.84	7.45	94	
			10	4.2	23.16	7.39	93	
			15	4.6	24.75	7.08	93	
			20	5.0	25.37	6.79	89	
			25	5.4	26.59	-	-	
			30	5.8	27.26	6.02	82	
1923								
03-18	33	Off Hakens lightskip	0	2.0	18.12			
			5	1.8	20.43			
			10	2.2	24.58			
			15	4.2	31.46			
			20	4.6	31.87			
			28	4.8	32.65			
04-20	33	"	0	5.3	18.98			
			5	5.1	26.77			
			10	5.5	31.26			
			15	5.9	33.15			
			20	6.0	33.27			
			25	6.0	33.49			
05-05	34	E Husvik	0	7.2	19.24			
			5	7.2	19.50			
			10	7.1	20.51			
			15	6.3	28.27			
			20	6.2	33.13			
			30	6.2	33.62			
			40	6.2	33.95			
05-09	25	W Valagrund	0	8.9	11.83	7.56	100	
			5	9.1	16.65	7.70	104	
			10	7.2	23.75	7.51	102	
			15	6.3	33.13	6.27	88	
			20	6.4	33.86	5.73	82	
			30	6.6	34.23	5.51	79	
			44	6.6	34.27	5.38	77	

Year date	Station No		Sample m	C°	S‰	O_2 ml/l	O_2 %	Remarks
1924								
08-11	35	NE Husvik	0	17.4	13.46			
			5	17.5	14.76			
			10	16.8	18.57			
			15	13.6	23.73			
			20	8.9	32.14			
			25	7.8	33.01			
08-12	35	"	0	17.9	13.62			
			5	17.8	13.91			
			10	17.2	16.40			
			15	14.2	23.36			
			20	9.8	25.30			
			25	7.7	32.86			
10-28	34	E Husvik	0	10.2	18.98			
			5	10.4	19.05			
			10	10.4	19.38			
			15	10.9	23.88			
			20	11.5	28.27			
			25	12.0	30.30			
11-13	34	"	0	8.01	9.54	7.50	94	
		B.-39	5	8.01	9.60	7.76	98	
			10	8.02	10.70	6.07	77	
			15	9.50	23.21	6.07	88	
			20	12.40	32.19	4.08	65	
			25	12.50	32.63	3.81	62	
			30	12.65	32.65	3.84	62	
			38.5	12.70	32.84	3.90	63	
1925								
05-11	34-35	NE Husvik	0	9.5	8.80			
			5	8.8	8.80			
			10	7.4	12.34			
			15	6.7	32.07			
			20	6.1	32.78			
			25	6.2	33.26			
06-08	26	Off Valagrund	0	15.3	9.98			
			5	14.9	12.65			
			10	13.6	18.28			
			15	6.9	33.48			
			20	6.8	33.64			
			25	6.4	33.67			

Year date	No		m	C°	S‰	ml/l	%	Remarks
1925								
08-08	18	W Valagrund B.d.-24 m	0	18.6	16.76			
			5	17.3	-			
			10	17.2	17.14			
			13	14.9	24.72			
			18	10.1	30.86			
			23	9.7	31.83			
08-12	34	E Husvik	0	19.2	13.39			
			5	18.6	14.65			
			10	17.7	17.88			
			15	9.4	32.54			
			20	8.4	33.33			
			25	8.4	33.33			
			30	8.35	33.33			