

VERSLAGEN EN TECHNISCHE GEGEVENS

Instituut voor Taxonomische Zoölogie (Zoölogisch Museum)

Universiteit van Amsterdam

No. 7

Preliminary results on fisheggs and fishlarvae from the
CICAR (Cooperative Investigation of the Caribbean and
Adjacent Regions) cruises 1970 and 1971

W.J. Brugge

20 december 1975

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Introduction

As part of the Cooperative Investigations of the Caribbean and Adjacent Regions (Cicar-project) plankton sampling was executed from 1970 to 1973. The cruises 10, 11, 12, 13, 14, 18 and 19 explored the area around Aruba, Bonaire and Curaçao, where the samples 1-98 (collected from 7 April to 21 July) and 200-214 (collected from 13 November to 18 December) were taken. (Fig.1) The area off the Guyana's was explored by the cruises 15, 16 and 17 where the stations 99-199 (collected from 23 August to 3 November) were taken. (Fig.2)

The net samples taken during cruise 10-19 are from 0 to 6 meters; only during cruise 13 and 14 also samples at 10, 18 and 27 meters were collected. During the cruises 22 and 23, in 1971, some additional net samples were taken. The nets used were open plankton nets of the Plymouth type, with 0,056 mm. diameter meshes. For the exact position of the stations and further information, one is referred to Van der Spoel and Koperdraat (1974). All samples were sorted. The fish eggs were counted and preserved in 4% formaline. The fish larvae were stained, mounted in 3486 slides and counted. All material collected is preserved in the Institute of Taxonomic Zoology of the University of Amsterdam.

As shown in Fig.1 and 2 the samples are not taken very systematically, so quantitative research is hardly possible. Fish eggs and fish larvae are given for the different stations and converted into the numbers for two hours fishing effort (table 1)

Fig.3 and 4 give a general impression of the distribution and density of fish eggs and fish larvae, during the months August, September and October 1970 off the Guyana coast. In these figures day- and night samples are taken together. Fish eggs as well as fish larvae are most abundant

in the upwelling area at a small distance from the coast. In this area the highest primary production and biomass is found. (Halbert a.o. 1969, Brugge 1974, Cadée 1975)

For further studies an investigation on species level will be necessary. This will give further information about spawning area's and also more data about the hydrological situation in the area concerned.

Literature

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- Cadée, G.C. 1975 Primary production of the Guyana Coast. Neth.Jour. Sea Res. 2 (1)
- Hulbert, E.M. & Nathaniel Corwin 1969 Influence of the Amazon river Outflow on the ecology of the Western Tropical Atlantic III The plactonic flora between the Amazon river and the Windward Islands. J.Mar.Res. 27 (1) : 55-72.
- Van der Spoel, S. & Koperdraat M.J. 1974. Sample list of the Cicar (Cooperative Investigation in the Caribbean and Adjacent Region) cruises 1970-1972. Verslagen. Techn. Geg. Inst. Tax. Zool. 3: 1-34

Table 1

Number of fish eggs and fish larvae caught and number of fish eggs and fish larvae / 2 hours fishing

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
10	1		7	8	14	17
	2	4	2	1	0	0
11	3	4	7	42	0	0
	4	4	2	12	0	0
	5	4	1	12	0	0
	5a		2	24	0	0
	6	4	5	30	0	0
	7	4	0	0	1	8
	8	4	37	222	0	0
12a	9	4	14	48	0	0
	10	4	0	0	0	0
	11	4	2	1	0	0
12b	12	4	2	3	0	0
	13	4	0	0	0	0
	14	4	0	0	0	0
	15	4	13	21	0	0
	15a		0	0	0	0
	16	4	7	14	0	0
	17	4	5	40	0	0
	18	4	2	6	0	0
	19	4	2	7	0	0
	19a	4	3	3	0	0
	19a'		0	0	0	0
	19b	4	0	0	0	0
	20	4	0	0	0	0
	21	4	0	0	1	1
	22	4	0	0	1	3
	23	4	3	5	0	0
	23a	4	0	0	0	0
	24	4	0	0	0	0
	25	4	0	0	0	0

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
12b	26	4	0	0	0	0
	26a		5	10	2	4
	27	4	0	0	0	0
	28	4	0	0	0	0
	29	4	0	0	2	3
	30	4	0	0	0	0
	31	4	0	0	0	0
	32	4	0	0	0	0
	33	4	0	0	0	0
13	34	4	0	0	2	6
	35	4	0	0	1	4
	36	4	0	0	2	6
	37	4	1	3	0	0
	38	4	1	3	1	3
	39	4	0	0	3	18
	40	4	0	0	3	12
	41	4	2	7	4	14
	42	2	1	9	0	0
	43	3	3	36	0	0
	44		3	18	0	0
	44a		0	0	0	0
	45	4	0	0	1	2
	46	4	4	19	0	0
	47	4	3	7	1	2
	48	4	0	0	1	3
	49	4	4	5	1	1
	50	4	1	3	1	3
	51	4	0	0	0	0
	52a	4	0	0	10	13
	52b	4	0	0	2	3
	53	2	0	0	9	9
		6	16	16	47	47
		10	0	0	6	6
		18	0	0	24	24

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
13	54	2	1	1	0	0
		6	3	3	10	10
		10	0	0	0	0
		18	1	1	13	13
	55	2	5	5	4	4
		6	2	2	24	24
		10	1	1	1	1
		18	8	8	8	8
	56	2	7	7	3	3
		6	3	3	26	26
		10	1	1	3	3
		18	8	8	17	17
	57	2	5	5	9	10
		6	6	7	11	13
		10	1	1	3	3
		18	0	0	11	13
	58	2	2	2	13	13
		6	2	2	6	6
		10	4	4	10	10
		18	4	4	20	20
	59	2	0	0	7	7
		6	4	4	42	42
		10	16	16	28	28
		18	5	5	7	7
	60	2	3	3	13	13
		6	9	9	7	7
		10	2	2	4	4
		18	12	12	19	19
	61	2	6	6	7	7
		6	13	13	22	22
		10	9	9	3	3
		18	17	17	19	19

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
13	62	2	13	13	20	20
		7	12	12	11	11
		15	1	1	23	23
		27	9	9	26	26
	63	2	9	12	1	1
		7	15	20	5	7
		15	3	4	13	17
		27	7	9	17	23
	64	2	0	0	1	1
		6	0	0	3	3
	65	2	0	0	1	1
		6	2	3	11	15
	66	2	16	15	2	2
		6	74	68	60	55
	67	2	6	5	4	3
		6	47	40	41	35
		10	2	2	7	6
	68	2	0	0	4	4
		6	0	0	3	3
		10	0	0	18	20
	69	2	6	6	3	3
		6	18	18	12	12
		10	16	16	2	2
	70	2	26	26	5	5
		6	5	5	4	4
		10	6	6	2	2
	72	2	5	5	25	25
		6	2	2	20	20
		10	1	1	30	30
	73	2	3	3	38	38
		6	0	0	44	44
		10	2	2	43	43
	74	2	5	5	32	32
		6	5	5	84	84
		10	5	5	31	31

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
13	75	2	0	0	24	24
		6	2	2	36	36
		10	2	2	42	42
	76	2	1	1	2	2
		6	2	2	36	36
		10	5	5	0	0
14	77	4	22	22	16	16
	78	4	2	2	17	17
	79	4	26	26	28	28
	80	4	22	22	45	45
	81	4	0	0	0	0
	82	4	1	1	8	8
	83	4	0	0	1	1
	84	4	3	3	4	4
	85	4	4	4	40	40
	86	4	0	0	33	33
	87	4	17	29	14	24
	88	4	4	4	12	12
	89	2	2	2	3	3
	90	2	2	2	22	22
	91	4	14	14	55	55
	91a	4	17	25	36	54
	92	4	2	2	7	7
	93	4	5	13	5	13
	94	4	4	4	36	36
95	4	7	7	41	41	
96	4	7	7	11	11	
97	2	19	26	1	1	
	6	1	1	16	22	
	10	0	0	40	55	
	15	1	1	3	4	
15d	98	4	4	7	6	11
	99	1	5	8	58	93
		5	5	8	15	24

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
15d	100	1	5	13	10	27
		5	7	19	9	24
	101	1	59	54	0	0
		5	69	63	0	0
	102	1	10	30	0	0
		5	30	90	0	0
	103	1	15	51	0	0
		5	9	31	0	0
	104	1	57	102	34	61
		5	91	163	39	70
	105	1	95	105	63	69
		5	157	173	2	2
	106	1	29	39	1	1
		5	16	21	34	45
15e	107	1	6	6	2	2
		5	13	13	18	12
	108	1	2	2	20	17
		5	12	10	55	47
	109	1	19	24	20	25
		5	73	92	34	43
	110	1+5	185	403	13	28
	(2 samples)					
	111	1	9	12	0	0
		5	56	75	0	0
112	5	825	1904	13	30	
114	1	16	43	0	0	
	5	14	37	42	112	
15g	116	1	22	33	2	3
		5	132	198	8	12
	117	1	7	10	1	1
		5	0	0	1	1
	118	1	20	32	1	2
		5	8	13	3	5
	119	1	12	25	4	8
		5	17	36	4	8

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
15g	120	1	25	75	5	15
		5	2	6	1	3
	121	5	10	40	1	4
15c	122	1	15	21	0	0
		5	0	0	18	25
	123	1	23	46	0	0
		5	53	106	8	16
	124	1	0	0	86	206
		5	16	38	114	274
	125	1	10	40	68	272
		5	0	0	17	68
	127	1	6	13	1	2
		5	13	29	10	22
	128	1	13	24	0	0
		5	49	90	5	9
	129	1	6	17	1	3
		5	4	11	0	0
	130	1	3	5	5	9
		5	4	7	1	2
15b	132	1	16	13	0	0
		5	0	0	0	0
	133	1	14	21	0	0
		5	65	97	17	25
	134	1	7	19	30	80
		5	3	8	13	35
	135	1	7	20	9	26
		5	0	0	1	3
	136	1	9	27	44	132
		5	5	15	17	51
	138	1	3	6	0	0
		5	13	26	1	2
	139	5	2	7	0	0
	141	1	0	0	0	0
		5	37	49	2	3
	142	1	1	2	12	26
		5	1	2	18	39

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.	
15a	143	1	2	3	3	5	
		5	8	13	9	14	
	144	1	12	13	0	0	
		5	2	2	0	0	
	145	1	9	36	0	0	
		5	19	76	0	0	
	146	1+5	24	72	6	18	
	(2 samples)						
		147	1+5	42	202	7	34
	(2 samples)						
		149	1	2	9	5	20
			5	87	373	2	8
		150	5	42	112	4	11
		151	5	68	181	25	67
	154	1	0	0	0	0	
		5	5	35	4	28	
16/17	156	2	53	49	5	5	
	157	2	355	710	145	290	
	158	2	0	0	0	0	
	159	2	8	27	0	0	
	160	2	2	1	2	1	
	161	2	1	1	0	0	
	162	2	0	0	0	0	
	164	6	9	12	1	1	
	165	3	320	93	54	16	
	166	3	79	41	39	20	
	166a	3	2	1	4	1	
	167	3	45	43	74	71	
	168	2	0	0	0	0	
	170	2	9	15	0	0	
	171	2	0	0	1	2	
	172	2	8	16	0	0	
	173	2	1	2	0	0	
	174	2	9	2	1	1	
	175	3	230	153	12	8	
	176	6	0	0	3	3	
177	6	2	8	12	48		

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.	
16/17	178	6	0	0	72	144	
	179	3	10	24	2	5	
	180	2	10	20	2	4	
	181	2	343	266	14	11	
	182	3	0	0	16	43	
	183	6	0	0	2	4	
	184	3	0	0	6	12	
	186	2	3	9	10	30	
	187	2	0	0	2	5	
	188	2	2	4	5	10	
	189	2	9	23	2	5	
	190	3	8	17	0	0	
	192	6	1	2	0	0	
	192a			0	0	0	0
	193	3	0	0	0	0	
	194	6	2	3	0	0	
	195	3	2	3	7	11	
	196	6	7	12	1	2	
	198	6	0	0	1	2	
	199	2	14	22	3	5	
18	200	2	0	0	0	0	
	201	2	102	33	2	1	
	202	2	18	4	6	1	
	203	2	13	4	5	2	
	204	2	4	3	1	1	
	205	2	0	0	10	3	
	206	2	18	5	4	1	
	207	2	0	0	1	1	
19	208	2	53	106	0	0	
	209	2	1	0	0	0	
	210	2	0	0	0	0	
	211	2	4	1	0	0	
	212	2	2	0	0	0	
	213	2	1	1	1	1	
	214	2	1	0	0	0	

Cruise no.	Station no.	Depth in meters	Number eggs caught	Number eggs caught/2 hrs.fish.	Number larvae caught	Number larvae caught/2 hrs.fish.
22	215	2	0	0	0	0
	216	2	0	0	0	0
	217	1	1	0	0	0
	218	2	0	0	0	0
	219a	2	0	0	1	1
	219b	2	0	0	7	7
	219c	2	11	11	0	0
	219d	2	0	0	0	0
	219e	2	11	11	0	0
	219f	2	0	0	0	0
	219g	2	23	23	0	0
	220	6	0	0	0	0
	221	6	2	2	0	0
	222	6	0	0	0	0
	223	6	0	0	0	0
	224	6	0	0	0	0
	225a	6	0	0	1	1
	225b	6	1	1	0	0
	226	6	0	0	0	0
	227	6	12	12	0	0
	228a	6	44	44	0	0
	228b	6	26	26	3	3
228c	6	0	0	0	0	
228d	2	196	196	5	5	
23	229a	2	0	0	0	0
	229b	2	0	0	1	1
	229c	2	0	0	36	36
	229d	2	0	0	2	2
	230	2	0	0	9	27
	231	2	0	0	51	102
	232	2	0	0	0	0
	233	2	0	0	1	1
	234a	2	0	0	0	0
	234b	2	1	1	0	0

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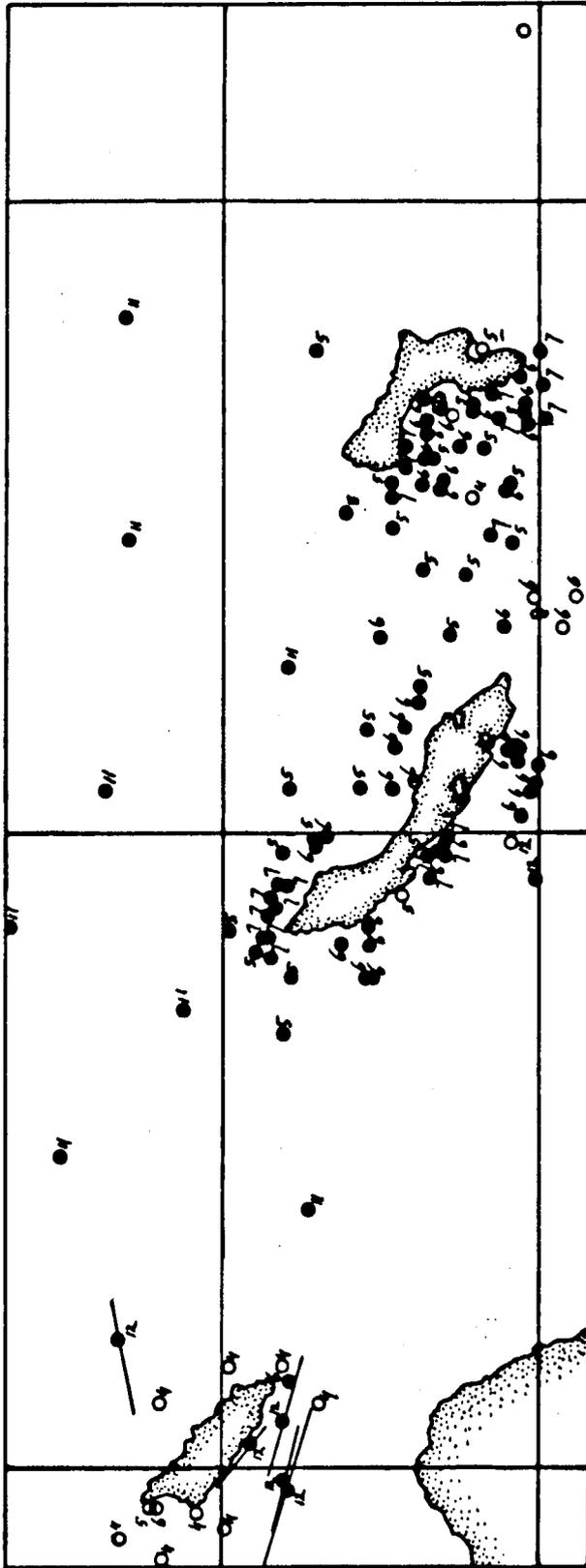


Fig. 1

4= April 1970	11= November 1970	0= Day
5= May 1970	12= December 1970	●= Night
6= June 1970	5= May 1971	○= Twilight
7= July 1970		

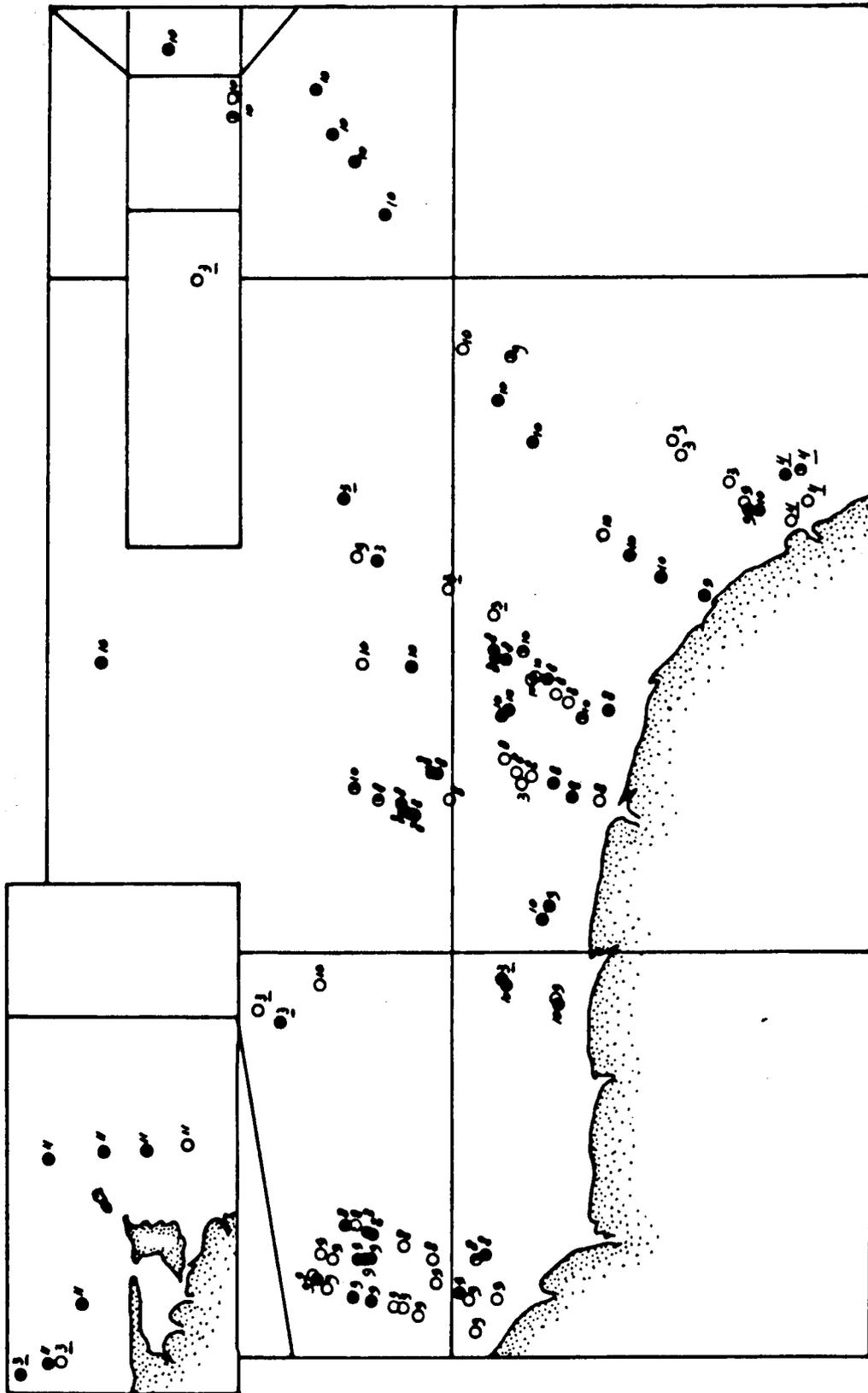


Fig. 2

8= August 1970
9= September 1970
10= October 1970
11= November 1970
3= March 1971
4= April 1971
○= Day
●= Night
◐= Twilight

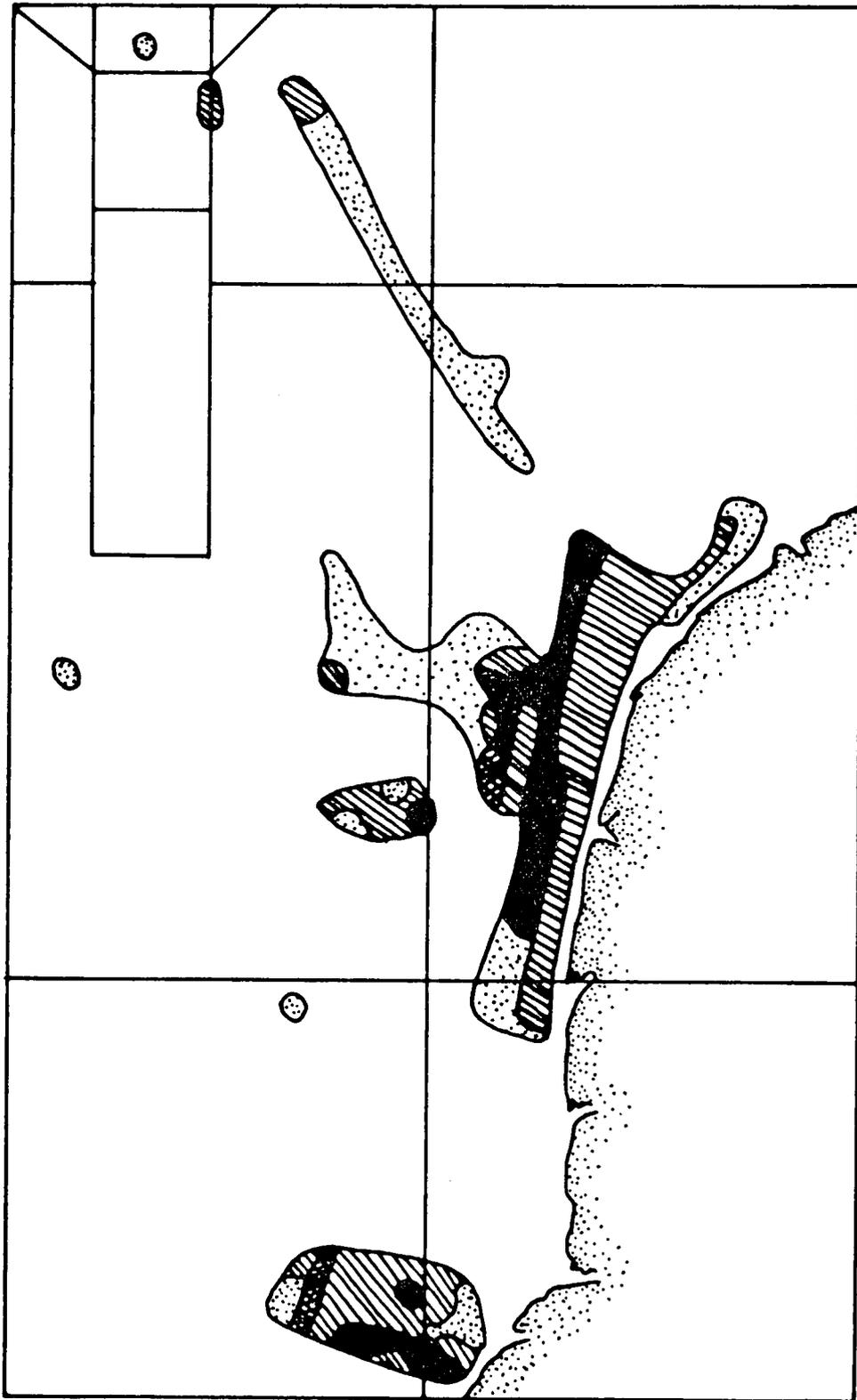


Fig.3 Number of fisheggs based on samples collected during August, September and October 1970.

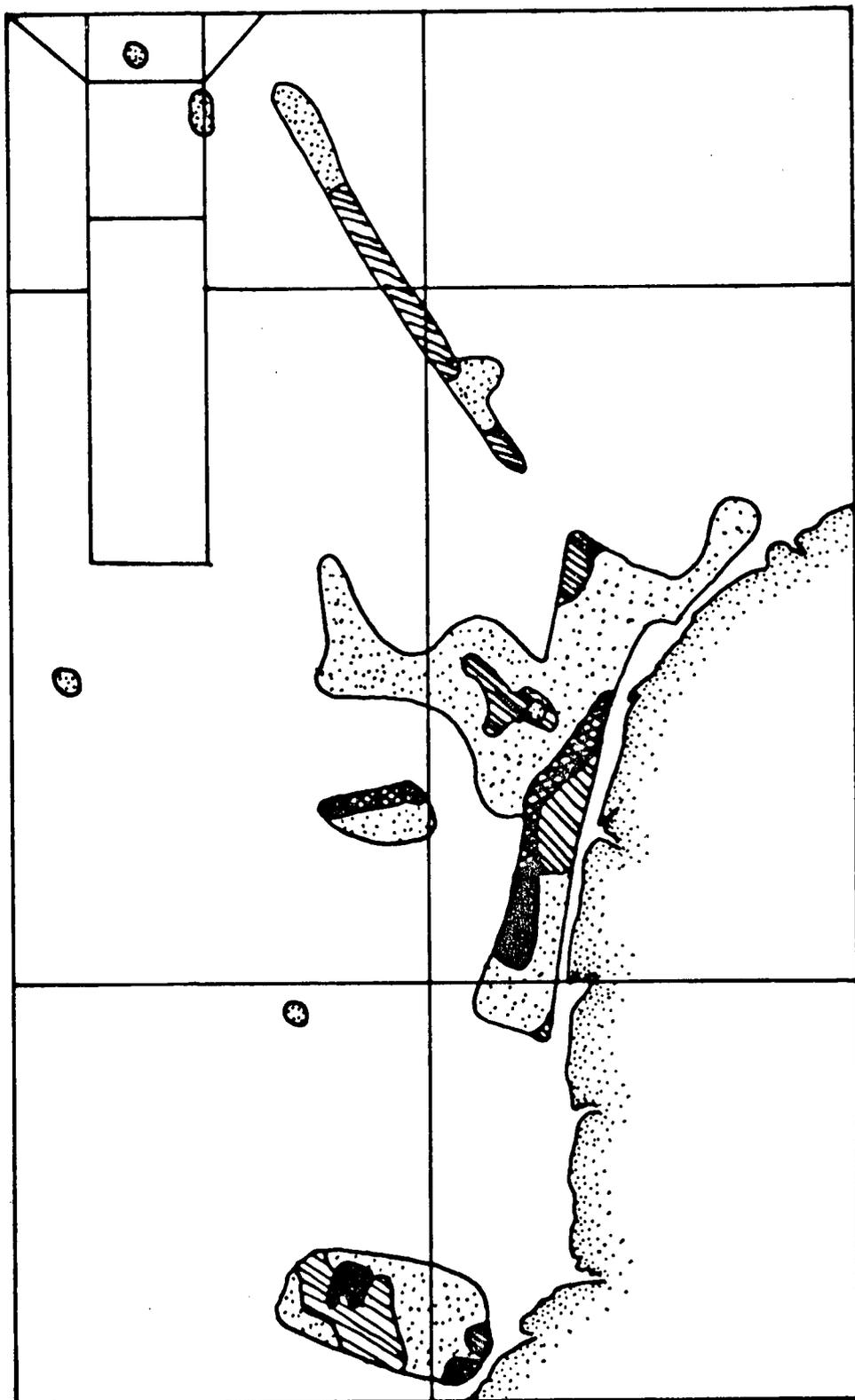


Fig. 4 Number of fishlarvae based on samples collected during August, September and October 1970.

