

Charlton

FISH COMMISSION OF OREGON
TRAWL INVESTIGATIONS
Report of Cruise 68-1, Shrimp

Vessel: MV Sunrise, chartered trawler.

Dates: January 23-March 21, 1968.

- Objectives:
1. To determine the vertical distribution of pink shrimp (Pandalus jordani).
 2. To collect associated oceanographic data.
 3. To compare size, sex and age composition of shrimp caught at various depths.
 4. To bring in live shrimp and sole for aquarium study.

Methods: From 34 to 51 shrimp pots were baited with frozen groundfish and fished for pink shrimp. Seventeen pots were attached at 5-fathom intervals to a main line. Two or three strings of pots were fished on each trip. Pots were pulled at 3- to 4-hour intervals for 24 hours.

Shrimp and fish caught were put in plastic bags and iced. All shrimp were sexed and measured at the laboratory. The stomachs of fish caught were examined.

The exact depth at which the pots were fishing can be approximated. The main lines were 85-fathoms long. An anchor with 20 feet of chain was used to anchor each string. Pots were attached at 5-fathom intervals with the first pot just above the anchor chain. A final pot was attached within 5 fathoms of the surface. Tables 1-5 show the surface pot as No. 1 and the bottom pot as No. 17.

During the cruise, 14 tows were made with a 30-foot square midwater trawl. A time-depth recorder was used to obtain net

depth. In addition, 9 tows were made with a 41-foot Gulf semi-balloon trawl. Fish caught were counted and weighed. A 1/2- to 1-pound shrimp sample was drawn from each tow catch and weighed, measured and sexed.

Five separate trips were made during the cruise.

Results: Trip one:

On January 23-24, 3 strings of gear were fished just before dark with shrimp pots at 5-fathom intervals. While pulling set No. 2, fog set in and made it difficult to locate the other strings. The pots were not reset and the following morning the weather forced us in to port. Shrimp were caught in all pots (Table 1).

One sablefish (Anoplopoma fimbria) was also caught in the pots.

Trip two:

Three strings of pots were fished February 7-8 with pots at 5-fathom intervals on each line. One of the strings could not be located until the next morning because the buoy light went out. The two remaining strings were pulled at 3- to 4-hour intervals for 24 hours. Shrimp catches were excellent with shrimp in every pot pulled at night (Table 2). Pots set at night and pulled in the early morning (sets No. 7 and 8) caught fewer shrimp. No shrimp were caught during the day.

Three sablefish were also caught.

Four bottom tows were made to compare daytime bottom catches with subsequent night catches in pots. The results of the bottom tows are shown in Table 6.

Live shrimp and Dover sole were collected for the aquarium.

Trip three:

Only one string of pots was set during the trip February 28-29. The midwater trawl was fished in conjunction with the pots. The pots were set 2 1/2 hours before dark and pulled at dark. No shrimp were caught. The pots were reset immediately and pulled approximately 1 1/2 hours later (set 2). All pots contained shrimp and the catch was excellent. One more set (3) was made. Pot catches are shown in Table 3.

Four tows were made with the midwater trawl. The shrimp catch ranged from 1/2 to 8 pounds (Table 7) per tow. On the fourth tow, the upper and lower doors on the port side became entangled and twisted the cables. The cable damage and increasing winds forced us to terminate the trip.

Trip four:

During the trip March 8-10, 3 strings of pots were fished. The pots were at 5-fathom intervals on each line, and each string was pulled at 3- to 4-hour intervals for 24 hours. Very few shrimp were caught in the pots before midnight (Table 4). However, after midnight shrimp catches increased. No shrimp were caught during the day.

Three tows each were made with the bottom trawl and midwater trawl (Tables 6 and 7).

Trip five:

Two strings of pots were fished during the trip March 19-21 with pots at 5-fathom intervals on each line. Again pots were

pulled at 3- to 4-hour intervals for 24 hours. Night pot catches were very good (Table 5). No shrimp were caught during the day.

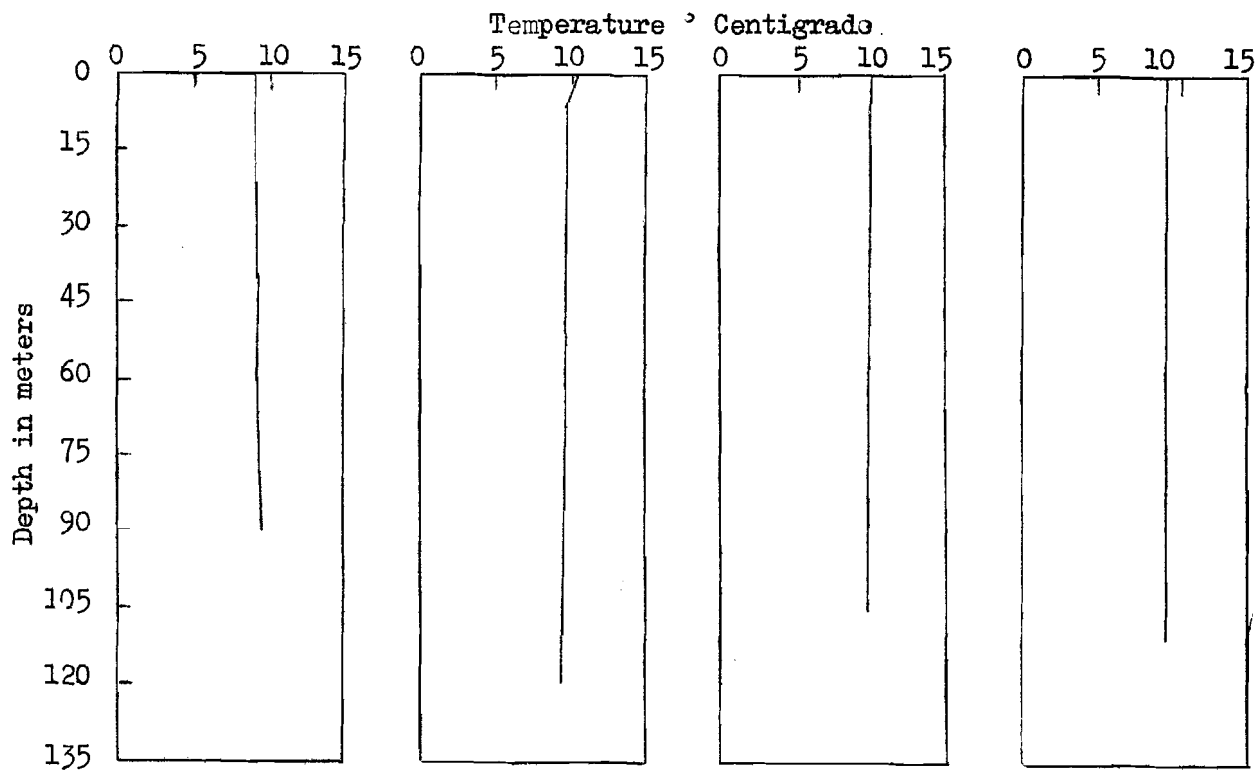
Seven midwater tows and two bottom tows were made during trip five. The results are shown in Tables 6 and 7. A photometer was used to take one series of light readings during the day.

Three of the four sablefish stomachs examined contained shrimp. Five of the shrimp recovered from the stomachs were measured.

Six subsurface temperature profiles were taken with a bathythermograph (Figure 1). Seven bottom and seven surface salinity samples were also taken.

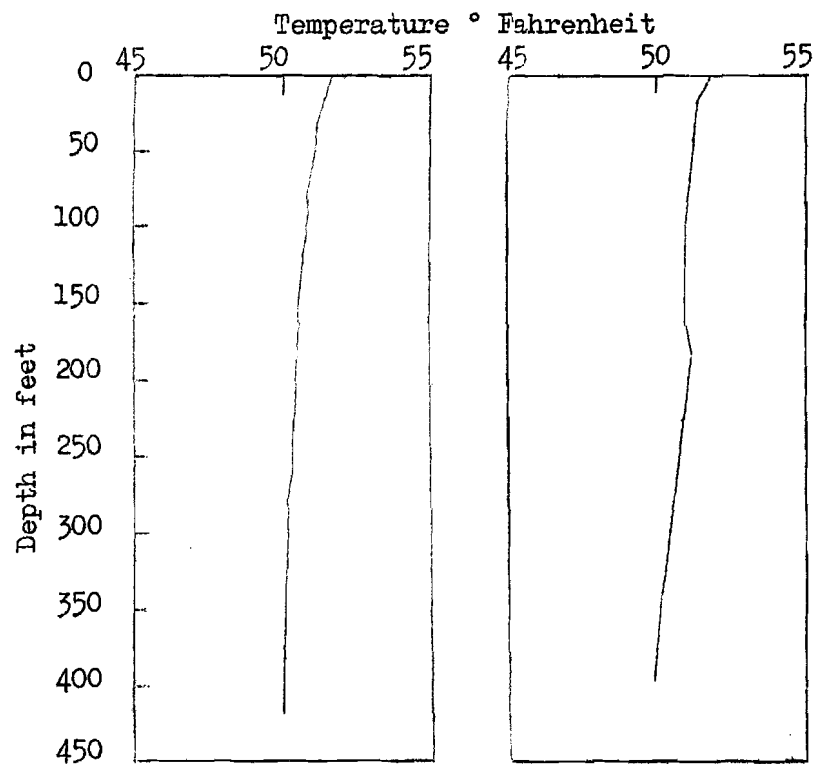
Personnel: Gary Milburn, Party Chief
John Bender, Aquatic Biologist
Rudy Lovvold, Vessel Captain
Einar Lovvold, Crewman

Gary Milburn
Research Division
June 6, 1968



Slide No.	#6	#7	#8	#9
Time (PST)	2000	1445	1700	0925
Date	2/7/68	2/28/68	3/8/68	3/9/68
Vessel	MV Sunrise	MV Sunrise	MV Sunrise	MV Sunrise
Loran	2H4 3290	2H4 3290	2H4 3280	2H4 3272
Depth	69 fathoms	71 fathoms	70 fathoms	72 fathoms

Figure 1. Bathythermograph traces (BT No. 3136) from cruise 68-1, February 7 to March 21, 1968



Slide No.	#10	#11
Time (PST)	1030	1030
Date	3/20/68	3/20/68
Vessel	MV Sunrise	MV Sunrise
Loran	2H4 3305	2H4 3290
Depth	77 fathoms	76 fathoms

Figure 1.(Continued) Bathythermograph traces (BT No. 3218 D)
from cruise 68-1, February 7 to March 21, 1968

Table 1. Pink shrimp sex, numbers, and percent by pot and date cruise 68-1, January 23-24, 1968

Pot no.	t. 1								t. 2									
	Down 1745				Loran 2H4 3292				Down 1800				Loran 2H4 3292					
	Up 2100				Depth 70 fms.				Up 2125				Depth 70 fms.					
Elapsed 3:15								Elapsed 3:25										
Numbers				Percent				Numbers				Percent						
M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	
1	0	0	2	2	57	0.0	0.0	100.0	100.0	13	0	95	108	74	12.0	0.0	88.0	100.0
2	0	0	8	8	76	0.0	0.0	100.0	100.0	9	0	63	72	78	12.5	0.0	87.5	98.4
3	8	0	51	59	71	13.6	0.0	86.4	98.0	4	0	35	39	70	10.3	0.0	89.7	100.0
4	21	0	89	110	83	19.1	0.0	80.9	100.0	17	0	122	139	77	12.2	0.0	87.8	100.0
5	11	0	37	48	82	22.9	0.0	77.1	100.0	19	0	81	100	82	19.0	0.0	81.0	98.8
6	5	0	31	36	82	13.9	0.0	86.1	100.0	6	0	58	64	73	9.4	0.0	90.6	96.6
7	4	0	33	37	74	10.8	0.0	89.2	97.0	8	0	31	39	80	20.5	0.0	79.5	100.0
8	3	0	54	57	73	5.3	0.0	94.7	100.0	4	0	11	15	108	26.7	0.0	73.3	100.0
9	1	0	25	26	67	3.8	0.0	96.2	100.0	5	0	41	46	74	10.9	0.0	89.1	100.0
10	2	0	23	25	78	8.0	0.0	92.0	100.0	7	0	37	44	84	15.9	0.0	84.1	100.0
11	18	0	46	64	90	28.1	0.0	71.9	100.0	4	0	18	22	81	18.2	0.0	81.8	100.0
12	6	0	18	24	93	25.0	0.0	75.0	100.0	1	0	1	2	91	50.0	0.0	50.0	100.0
13	2	0	30	32	65	6.3	0.0	93.8	100.0	6	0	18	24	90	25.0	0.0	75.0	100.0
14	1	0	19	20	70	5.0	0.0	95.0	100.0	4	0	24	28	77	14.3	0.0	85.7	100.0
15	1	0	33	34	67	2.9	0.0	97.1	100.0	1	0	12	13	71	7.7	0.0	92.3	100.0
16	0	0	12	12	60	0.0	0.0	100.0	100.0	1	0	2	3	92	33.3	0.0	66.7	100.0
17	0	0	63	63	56	0.0	0.0	100.0	100.0	0	0	1	1	68	0.0	0.0	100.0	100.0
Total	83	0	574	657						109	0	650	759					

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 1. Pink shrimp sex, numbers, and percent by pot and leg, cruise 68-1, January 23-24, 1968

Pot no.	1815					Loran 2H4 3292				2115					Loran 2H4 3292			
	Down					Depth 70 fms.				Down					Depth 70 fms.			
	Up					Percent				Up					Percent			
	Numbers				Shrimp/lb	Percent				Numbers				Percent				
	M	T	F	Total		M	T	F	Gravid ^{1/}	M	T	F	Total	M	T	F	Gravid ^{1/}	
1	0	0	9	9	59	0.0	0.0	100.0	100.0	4	0	92	96	70	4.2	0.0	95.8	100.0
2	0	0	1	1	76	0.0	0.0	100.0	100.0	3	0	71	74	69	4.1	0.0	95.9	100.0
3	0	0	9	9	67	0.0	0.0	100.0	100.0	1	0	30	31	68	3.2	0.0	96.8	100.0
4	1	0	10	11	79	9.1	0.0	90.9	100.0	3	0	33	36	71	8.3	0.0	91.7	100.0
5	1	0	12	13	61	7.7	0.0	92.3	100.0	5	0	21	26	86	19.2	0.0	80.8	100.0
6	0	0	29	29	68	0.0	0.0	100.0	100.0	1	0	11	12	75	8.3	0.0	91.7	100.0
7	8	0	35	43	79	18.6	0.0	81.4	100.0	2	0	5	7	96	28.6	0.0	71.4	100.0
8	5	0	16	21	73	23.8	0.0	76.2	100.0	1	0	8	9	70	11.1	0.0	88.9	100.0
9	3	0	18	21	89	14.3	0.0	85.7	100.0	0	0	6	6	72	0.0	0.0	100.0	100.0
10	4	0	25	29	82	13.8	0.0	86.2	100.0	5	0	11	16	88	31.3	0.0	68.8	100.0
11	3	0	3	6	130	50.0	0.0	50.0	100.0	1	0	9	10	77	10.0	0.0	90.0	100.0
12	26	0	52	78	99	33.3	0.0	66.7	100.0	1	0	3	4	91	25.0	0.0	75.0	100.0
13	6	0	41	47	78	12.8	0.0	87.2	100.0	0	0	8	8	67	0.0	0.0	100.0	100.0
14	2	0	14	16	71	12.5	0.0	87.5	100.0	0	0	3	3	59	0.0	0.0	100.0	100.0
15	3	0	23	26	79	11.5	0.0	88.5	100.0	0	0	8	8	74	0.0	0.0	100.0	100.0
16	0	0	13	13	67	0.0	0.0	100.0	100.0	0	0	4	4	61	0.0	0.0	100.0	100.0
17	1	0	16	17	64	5.9	0.0	94.1	100.0	No Pot				No Pot				
Total	63	0	326	389						27	0	323	350					

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 2. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, February 7-8, 1968

Pot no.	Set 1								Set 2									
	Down 1835				Loran 2H4 3292				Down 1900				Loran 2H4 3292					
	Up 2215				Loran 2H5 3442				Up 2140				Loran 2H5 3442					
Elapsed 3:40				Depth 69 fms.				Elapsed 2:40				Depth 69 fms.						
Numbers				Percent				Numbers				Percent						
M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	
1	83	0	239	322	100	25.8	0.0	74.2	99.6	49	0	112	161	102	30.4	0.0	69.6	97.3
2	7	0	47	54	85	13.0	0.0	87.0	100.0	135	0	465	600	98	22.5	0.0	77.5	100.0
3	27	0	149	176	96	15.3	0.0	84.7	98.7	20	0	121	141	92	14.2	0.0	85.8	100.0
4	17	1	117	135	84	12.6	0.7	86.7	100.0	43	0	266	309	91	13.9	0.0	86.1	99.6
5	12	0	115	127	89	9.4	0.0	90.6	100.0	10	0	41	51	100	19.6	0.0	80.4	100.0
6	10	0	51	61	89	16.4	0.0	83.6	100.0	11	0	25	36	103	30.6	0.0	69.4	100.0
7	10	0	51	61	93	16.4	0.0	83.6	100.0	0	0	12	12	88	0.0	0.0	100.0	100.0
8	11	0	50	61	94	18.0	0.0	82.0	100.0	5	0	17	22	92	22.7	0.0	77.3	94.1
9	2	0	20	22	89	9.1	0.0	90.9	100.0	9	0	13	22	107	40.9	0.0	59.1	100.0
10	1	0	11	12	83	8.3	0.0	91.7	100.0	8	0	23	31	98	25.8	0.0	74.2	95.7
11	6	0	17	23	104	26.1	0.0	73.9	100.0	4	0	8	12	101	33.3	0.0	66.7	100.0
12	5	0	7	12	111	41.7	0.0	58.3	100.0	5	0	10	15	108	33.3	0.0	66.7	100.0
13	4	0	19	23	92	17.4	0.0	82.6	100.0	2	0	3	5	103	40.0	0.0	60.0	100.0
14	1	0	3	4	95	25.0	0.0	75.0	100.0	6	0	5	11	131	54.5	0.0	45.5	100.0
15	1	0	6	7	95	14.3	0.0	85.7	100.0	3	0	6	9	93	33.3	0.0	66.7	100.0
16	0	0	14	14	76	0.0	0.0	100.0	100.0	3	0	12	15	83	20.0	0.0	80.0	100.0
17	0	0	5	5	84	0.0	0.0	100.0	100.0	0	0	13	13	66	0.0	0.0	100.0	100.0
Total	197	1	921	1,119						313	0	1,152	1,465					

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 2. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, February 7-8, 1968

Pot no.	Set 3								Set 4									
	Down 2240				Loran 2H4 3293				Down 2200				Loran 2H4 3293					
	Up 0220				Loran 2H5 3442				Up 0140				Loran 2H5 3442					
Elapsed 3:40				Depth 69 fms.				Elapsed 3:40				Depth 69 fms.						
Numbers				Percent				Numbers				Percent						
M T F Total Shrimp/lb				M T F Gravid ^{1/}				M T F Total Shrimp/lb				M T F Gravid ^{1/}						
1	8	0	26	34	97	23.5	0.0	76.5	100.0	1	0	1	2	101	50.0	0.0	50.0	100.0
2	8	0	19	27	97	29.6	0.0	70.4	100.0	6	0	8	14	113	42.9	0.0	57.1	100.0
3	3	0	11	14	92	21.4	0.0	78.6	100.0	5	0	4	9	124	55.6	0.0	44.4	100.0
4	26	0	61	87	130	29.9	0.0	70.1	100.0	26	0	65	91	99	28.6	0.0	71.4	98.5
5	12	0	33	45	90	26.7	0.0	73.3	100.0	33	0	55	88	105	37.5	0.0	62.5	100.0
6	6	0	20	26	94	23.1	0.0	76.9	100.0	0	0	6	6	80	0.0	0.0	100.0	100.0
7	4	0	25	29	85	13.8	0.0	86.2	100.0	8	0	31	39	97	20.5	0.0	79.5	100.0
8	2	0	28	30	82	6.7	0.0	93.3	100.0	2	0	25	27	88	7.4	0.0	92.6	100.0
9	4	0	10	14	98	28.6	0.0	71.4	100.0	3	0	22	25	85	12.0	0.0	88.0	100.0
10	12	0	21	33	101	36.4	0.0	63.6	100.0	11	0	28	39	105	28.2	0.0	71.8	100.0
11	9	0	31	40	98	22.5	0.0	77.5	100.0	1	0	15	16	86	6.3	0.0	93.7	100.0
12	0	0	34	34	78	0.0	0.0	100.0	97.1	6	0	17	23	101	26.1	0.0	73.9	100.0
13	7	0	74	81	88	8.6	0.0	91.4	98.6	5	0	42	47	86	9.6	0.0	90.4	100.0
14	11	0	42	53	97	20.8	0.0	79.2	100.0	2	0	44	46	80	4.3	0.0	95.7	97.7
15	1	0	27	28	78	3.6	0.0	96.4	100.0	4	0	33	37	88	10.8	0.0	89.2	100.0
16	0	0	29	29	73	0.0	0.0	100.0	100.0	0	0	12	12	69	0.0	0.0	100.0	100.0
17	0	0	47	47	-	0.0	0.0	100.0	100.0	0	0	24	24	70	0.0	0.0	100.0	100.0
Total	113	0	538	651						113	0	432	545					

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 2. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, February 7-8, 1968

Pot no.	Set 5								Set 6									
	Down 0240				Loran 2H4 3300				Down 0200				Loran 2H4 3300					
	Up 0555				Loran 2P5 3442				Up 0515				Loran 2P5 3442					
Elapsed 3:15				Depth 69-70 fms.				Elapsed 3:15				Depth 69-70 fms.						
Numbers				Percent				Numbers				Percent						
M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	
1	2	0	49	51	74	3.9	0.0	96.1	100.0	0	0	8	8	64	0.0	0.0	100.0	100.0
2	1	0	5	6	88	16.7	0.0	83.3	100.0	5	0	107	112	76	4.5	0.0	95.5	100.0
3	13	0	132	145	78	9.0	0.0	91.0	98.5	9	0	80	89	79	10.1	0.0	89.9	98.8
4	2	0	80	82	72	2.4	0.0	97.6	97.5	1	0	49	50	79	2.0	0.0	98.0	100.0
5	11	0	84	95	72	11.6	0.0	88.4	98.8	2	0	26	28	80	7.1	0.0	92.9	100.0
6	8	0	100	108	73	7.4	0.0	92.6	100.0	6	0	78	84	83	7.1	0.0	92.9	98.7
7	3	0	45	48	67	6.3	0.0	93.8	100.0	0	0	42	42	73	0.0	0.0	100.0	100.0
8	5	0	79	84	89	6.0	0.0	94.0	100.0	1	0	36	37	80	2.7	0.0	97.3	100.0
9	2	0	50	52	66	3.8	0.0	96.2	100.0	1	0	47	48	81	2.1	0.0	97.9	100.0
10	4	0	68	72	66	5.6	0.0	94.4	100.0	9	0	147	156	84	5.8	0.0	94.2	100.0
11	2	0	107	109	72	1.8	0.0	98.2	99.1	6	0	114	120	76	5.0	0.0	95.0	100.0
12	2	0	66	68	74	2.9	0.0	97.1	100.0	1	0	122	123	77	0.8	0.0	99.2	100.0
13	1	0	77	78	72	1.3	0.0	98.7	100.0	1	0	70	71	76	1.4	0.0	98.6	100.0
14	0	0	68	68	63	0.0	0.0	100.0	100.0	1	0	56	57	70	1.8	0.0	98.2	100.0
15	1	0	74	75	65	1.3	0.0	98.7	100.0	0	0	54	54	71	0.0	0.0	100.0	100.0
16	0	0	20	20	67	0.0	0.0	100.0	100.0	0	0	4	4	70	0.0	0.0	100.0	100.0
17	0	0	2	2	65	0.0	0.0	100.0	100.0	0	0	9	9	68	0.0	0.0	100.0	100.0
Total 57 0 1,106 1,163									43 0 1,049 1,092									

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 2. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, February 7-8, 1968

Pot no.	Set 7								Set 8									
	Down 0630				Loran 2H4 3310				Down 0545				Loran 2H4 3310					
	Up 1000				Loran 2H5 3442				Up 0920				Loran 2H5 3442					
Elapsed 3:30				Depth 69-71 fms.				Elapsed 3:35				Depth 69-71 fms.						
Number				Percent				Number				Percent						
M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	
1	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	
2	0	0	0	0	0.0	0.0	0.0	0.0	0	0	1	1	76	0.0	0.0	100.0	100.0	
3	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	
4	0	0	0	0	0.0	0.0	0.0	0.0	3	0	2	5	98	60.0	0.0	40.0	100.0	
5	0	0	0	0	0.0	0.0	0.0	0.0	4	0	4	8	107	50.0	0.0	50.0	100.0	
6	0	0	0	0	0.0	0.0	0.0	0.0	0	0	4	4	75	0.0	0.0	100.0	100.0	
7	0	0	1	1	77	0.0	0.0	100.0	100.0	2	0	4	6	102	33.3	0.0	66.7	100.0
8	0	0	0	0	0	0.0	0.0	0.0	0.0	6	0	7	13	123	46.2	0.0	53.8	100.0
9	0	0	0	0	0	0.0	0.0	0.0	0.0	5	0	17	22	88	22.7	0.0	77.3	94.1
10	0	0	0	0	0	0.0	0.0	0.0	0.0	7	0	25	32	87	21.9	0.0	78.1	100.0
11	0	0	0	0	0	0.0	0.0	0.0	0.0	5	0	18	23	87	21.7	0.0	78.3	94.4
12	0	0	0	0	0	0.0	0.0	0.0	0.0	1	0	4	5	85	20.0	0.0	80.0	100.0
13	0	0	0	0	0	0.0	0.0	0.0	0.0	4	0	34	38	74	10.5	0.0	89.5	100.0
14	0	0	0	0	0	0.0	0.0	0.0	0.0	2	0	20	22	71	9.1	0.0	90.9	100.0
15	2	0	1	3	150	66.7	0.0	33.3	100.0	1	0	38	39	73	2.6	0.0	97.4	100.0
16	-	-	-	-	-	-	-	-	-	1	0	9	10	65	10.0	0.0	90.0	100.0
17	0	0	29	29	64	0.0	0.0	100.0	100.0	2	0	31	33	69	6.1	0.0	93.9	100.0
Total	2	0	31	33						43	0	218	261					

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 2. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, February 7-8, 1968

Pot no.	Set 9				Percent				
	Down		1915		Loran 2H4		3292		
	Up		0830		Loran 2H5		3442		
Elapsed		13:15		Depth		69 fms.			
		Numbers		Total Shrimp/lb		F Gravid ^{1/}			
M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	
1	0	0	5	5	71	0.0	0.0	100.0	100.0
2	2	0	20	22	85	9.1	0.0	90.9	100.0
3	23	0	205	228	82	10.1	0.0	89.9	100.0
4	24	0	130	154	79	15.6	0.0	84.4	100.0
5	5	0	55	60	78	8.3	0.0	91.7	100.0
6	1	0	43	44	72	2.3	0.0	97.7	100.0
7	0	0	11	11	68	0.0	0.0	100.0	100.0
8	0	0	5	5	85	0.0	0.0	100.0	100.0
9	7	0	78	85	81	8.2	0.0	91.8	100.0
10	3	0	59	62	72	4.8	0.0	95.2	100.0
11	0	0	30	30	64	0.0	0.0	100.0	100.0
12	1	0	77	78	71	1.3	0.0	98.7	100.0
13	0	0	76	76	72	0.0	0.0	100.0	100.0
14	3	0	67	70	75	4.3	0.0	95.7	100.0
15	1	0	86	87	67	1.1	0.0	98.9	100.0
16	1	0	62	63	65	1.6	0.0	98.4	100.0
17	0	0	20	20	69	0.0	0.0	100.0	100.0
Total	71	0	1,029	1,100					

^{1/} Percent of total females.

M = males

T = transitionals

F = females

Table 3. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, February 28-29, 1968

Pot No.	Set 2									Set 3										
	Down		1900		Loran	2H4 3280		Depth	71 fms.		Down		2100		Loran	2H4 3280		Depth	72 fms.	
	Up		2035			Elapsed			1:35		Elapsed		3:20							
Numbers		Total Shrimp/lb		Percent		Gravid ^{1/}		Numbers		Total Shrimp/lb		Percent		Gravid ^{1/}						
M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}			
1	36	2	350	388	85	9.3	0.5	90.2	70.1	2	0	5	7	101	28.6	0.0	71.4	60.0		
2	45	3	239	287	90	15.7	1.0	83.3	75.7	4	0	18	22	86	18.2	0.0	81.8	94.4		
3	7	0	83	90	88	7.8	0.0	92.2	75.9	8	0	12	20	108	40.0	0.0	60.0	83.3		
4	26	2	104	132	97	19.7	1.5	78.8	76.0	11	0	27	38	97	28.9	0.0	71.1	77.8		
5	20	0	94	114	95	17.5	0.0	82.5	80.9	4	2	62	68	86	5.9	2.9	91.2	75.8		
6	14	0	90	104	91	13.5	0.0	86.5	76.7	4	0	29	33	84	12.1	0.0	87.9	86.2		
7	15	1	42	58	94	25.9	1.7	72.4	76.2	4	0	29	33	88	12.1	0.0	87.9	86.2		
8	8	2	41	51	101	15.7	3.9	80.4	73.2	1	0	35	36	86	2.8	0.0	97.2	77.1		
9	6	0	48	54	87	11.1	0.0	88.9	87.5	1	0	17	18	79	5.6	0.0	94.4	76.5		
10	5	0	6	11	118	45.5	0.0	54.5	50.0	1	0	22	23	84	4.3	0.0	95.7	63.6		
11	9	0	9	18	132	50.0	0.0	50.0	100.0	0	0	16	16	73	0.0	0.0	100.0	68.8		
12	9	0	31	40	90	22.5	0.0	77.5	96.8	0	0	15	15	72	0.0	0.0	100.0	60.0		
13	2	0	31	33	75	6.1	0.0	93.9	93.5	1	0	27	28	82	3.6	0.0	96.4	85.2		
14	2	0	60	62	75	3.2	0.0	96.8	93.3	0	0	12	12	74	0.0	0.0	100.0	83.3		
15	2	0	53	55	74	3.6	0.0	96.4	94.3	0	0	30	30	78	0.0	0.0	100.0	73.3		
16	0	0	16	16	71	0.0	0.0	100.0	87.5	0	0	23	23	75	0.0	0.0	100.0	91.3		
17	0	0	3	3	76	0.0	0.0	100.0	66.7	0	0	1	1	61	0.0	0.0	100.0	100.0		
Total	206	10	1,300	1,516						41	2	380	423							

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 4. Pink shrimp sex, numbers, and percent by pot and set, cruise 68-1, March 8-10, 1968

Pot no.	Set 1								Set 2								
	Down 1715				Loran 2H4 3270				Down 1730				Loran 2H4 3276				
	Up 2105				Depth 69 fms.				Up 2135				Depth 70 fms.				
Elapsed 3:50								Elapsed 4:05									
Numbers				Shrimp/lb	Percent				Numbers				Shrimp/lb	Percent			
M	T	F	Total		M	T	F	Gravid ^{1/}	M	T	F	Total		M	T	F	Gravid ^{1/}
1	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
2	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
3	0	0	4	4	74	0.0	0.0	100.0	25.0	0	2	2	91	0.0	0.0	100.0	0.0
4	0	0	0	0	0	0.0	0.0	0.0	0.0	0	3	3	91	0.0	0.0	100.0	0.0
5	0	1	4	5	39	0.0	20.0	80.0	0.0	1	16	17	99	5.9	0.0	94.1	0.0
6	0	0	8	8	83	0.0	0.0	100.0	12.5	1	2	3	105	33.3	0.0	66.7	0.0
7	1	1	9	11	91	9.1	9.1	81.8	0.0	0	0	0	0	0.0	0.0	0.0	0.0
8	0	0	1	1	77	0.0	0.0	100.0	0.0	2	7	9	93	22.2	0.0	77.8	14.3
9	0	0	1	1	99	0.0	0.0	100.0	0.0	0	7	7	96	0.0	0.0	100.0	0.0
10	0	0	0	0	0	0.0	0.0	0.0	0.0	0	2	2	83	0.0	0.0	100.0	0.0
11	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
12	0	0	2	2	95	0.0	0.0	100.0	0.0	0	1	1	106	0.0	0.0	100.0	0.0
13	0	1	3	4	94	0.0	25.0	75.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
14	0	0	1	1	91	0.0	0.0	100.0	0.0	0	2	2	91	0.0	0.0	100.0	50.0
15	0	0	4	4	92	0.0	0.0	100.0	0.0	0	2	2	91	0.0	0.0	100.0	0.0
16	0	0	0	0	0	0.0	0.0	0.0	0.0	0	1	1	106	0.0	0.0	100.0	0.0
17	0	0	40	40	78	0.0	0.0	100.0	75.0	1	8	9	80	11.1	0.0	88.9	75.0
Total	1	3	77	81						5	0	53	58				

^{1/} Percent of total females.

M = males
T = transitionals
F = females

Table 4. (continued)

Pot no.	Set 3									Set 4								
	Down 1745 Up 2155 Elapsed 4:10					Loran 2H4 3282 Depth 71 fms.				Down 2125 Up 0120 Elapsed 3:55				Loran 2H4 3272 Depth 69 fms.				
	Numbers					Percent				Numbers				Percent				
	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}
1	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0
2	1	0	3	4	107	25.0	0.0	75.0	0.0	1	0	6	7	106	14.3	0.0	85.7	16.7
3	4	0	5	9	108	44.4	0.0	55.6	0.0	8	1	10	19	-	42.1	5.3	52.6	0.0
4	1	0	7	8	107	12.5	0.0	87.5	0.0	1	0	1	2	-	50.0	0.0	50.0	0.0
5	1	0	9	10	89	10.0	0.0	90.0	0.0	4	3	22	29	-	13.8	10.3	75.9	18.2
6	3	0	11	14	101	21.4	0.0	78.6	0.0	6	3	70	79	-	7.6	3.8	88.6	11.4
7	0	0	5	5	97	0.0	0.0	100.0	20.0	12	9	95	116	-	10.3	7.3	81.9	14.7
8	0	0	0	0	0	0.0	0.0	0.0	0.0	9	1	01	111	-	8.1	0.9	91.0	17.8
9	0	0	4	4	92	0.0	0.0	100.0	0.0	1	2	40	43	-	2.3	4.7	93.0	32.5
10	0	0	3	3	95	0.0	0.0	100.0	0.0	0	0	43	43	-	0.0	0.0	100.0	23.3
11	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	18	18	-	0.0	0.0	100.0	5.6
12	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	20	20	-	0.0	0.0	100.0	20.0
13	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	14	14	-	0.0	0.0	100.0	14.3
14	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	2	2	-	0.0	0.0	100.0	0.0
15	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	-	0.0	0.0	0.0	0.0
16	0	0	2	2	126	0.0	0.0	100.0	0.0	0	0	4	4	-	0.0	0.0	100.0	25.0
17	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	12	12	-	0.0	0.0	100.0	61.1
Total	10	0	49	59						42	9	64	525					

^{1/} Percent of total females.

M = males

T = transitionals

F = females

Table 4. (continued)

Pot no.	Set 5									Set 6								
	Down 2145 Up 0205 Elapsed 4:20					Loran 2H4 3276 Depth 70 fms.				Down 2215 Up 0230 Elapsed 4:15					Loran 2H4 3283 Depth 70 fms.			
	Numbers					Percent				Numbers					Percent			
	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}	M	T	F	Total	Shrimp/lb	M	T	F	Gravid ^{1/}
1	0	0	0	0	0	0.0	0.0	0.0	0.0	1	0	5	6	106	16.7	0.0	83.3	20.0
2	0	0	0	0	0	0.0	0.0	0.0	0.0	37	5	32	74	125	50.0	6.8	43.2	3.1
3	2	1	8	11	-	18.2	9.1	72.7	0.0	16	5	22	43	101	37.2	11.6	51.2	9.1
4	11	10	32	53	-	20.8	18.9	60.4	12.5	0	0	2	2	93	0.0	0.0	100.0	0.0
5	1	2	9	12	-	8.3	11.7	75.0	0.0	6	5	63	72	93	8.3	4.2	87.5	6.3
6	7	1	40	48	-	14.6	2.1	83.3	20.0	5	2	63	70	91	7.1	2.9	90.0	14.3
7	1	2	29	32	-	3.1	6.3	90.6	20.7	13	2	61	76	96	17.1	2.6	80.3	18.0
8	5	0	27	32	-	15.6	0.0	84.4	14.8	2	7	41	50	97	4.0	14.0	82.0	14.6
9	6	4	70	80	-	7.5	5.0	87.5	27.1	9	2	32	43	102	20.9	4.7	74.4	12.5
10	8	1	65	74	-	10.8	1.4	87.8	23.1	1	2	15	18	97	5.6	11.1	83.3	0.0
11	1	0	14	15	-	6.7	0.0	93.3	21.4	4	1	16	21	106	19.0	4.8	76.2	6.3
12	1	0	31	32	-	3.1	0.0	96.9	16.1	3	0	12	15	100	20.0	0.0	80.0	33.3
13	1	0	3	4	-	25.0	0.0	75.0	0.0	3	0	4	7	103	42.9	0.0	57.1	25.0
14	0	0	15	15	-	0.0	0.0	100.0	13.3	0	0	1	1	89	0.0	0.0	100.0	0.0
15	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0
16	0	0	1	1	-	0.0	0.0	100.0	100.0	0	0	3	3	114	0.0	0.0	100.0	0.0
17	0	0	17	17	-	0.0	0.0	100.0	58.8	0	0	0	0	0	0.0	0.0	0.0	100.0
Total	44	21	31	426						100	29	32	501					

^{1/} Percent of total females.

M = males

T = transitionals

F = females

Table 4 (continued)

Pot no.	Set 7									Set 8								
	Down 0150					Loran 2H4 3272				Down 0220					Loran 2H4 3276			
	Up 0520					Depth 69 fms.				Up 0555					Depth 70 fms.			
	Elapsed 3:30					Percent				Elapsed 3:35					Percent			
	Numbers				Total Shrimp/lb	Percent				Numbers				Total Shrimp/lb	Percent			
	M	T	F			M	T	F	Gravid ^{1/}	M	T	F			M	T	F	Gravid ^{1/}
1	1	0	5	6	-	16.7	0.0	83.3	0.0	0	0	4	4	-	0.0	0.0	100.0	25.0
2	41	27	102	170	74	24.1	15.9	60.0	24.5	0	1	25	26	-	0.0	3.8	96.2	8.0
3	19	4	127	150	-	12.7	2.7	84.7	21.3	0	0	4	4	-	0.0	0.0	100.0	25.0
4	16	8	227	251	-	6.4	3.2	90.4	20.7	0	0	20	20	-	0.0	0.0	100.0	15.0
5	0	0	115	115	-	0.0	0.0	100.0	23.5	1	2	108	111	-	0.9	1.8	97.3	25.0
6	0	0	74	74	-	0.0	0.0	100.0	32.4	1	0	100	101	-	1.0	0.0	99.0	35.0
7	0	1	72	73	-	0.0	1.4	98.6	29.2	2	2	105	109	-	1.8	1.8	96.3	36.2
8	4	5	121	130	-	3.1	3.8	93.1	39.7	2	0	74	76	-	2.6	0.0	97.4	41.9
9	2	3	110	115	-	1.7	2.6	95.7	42.7	1	0	118	119	-	0.8	0.0	99.2	38.1
10	1	3	84	88	89	1.1	3.4	95.5	70.2	1	0	30	31	-	3.2	0.0	96.8	23.3
11	1	0	51	52	-	1.9	0.0	98.1	56.9	0	0	48	48	-	0.0	0.0	100.0	43.8
12	2	0	62	64	-	3.1	0.0	96.9	71.0	0	1	51	52	-	0.0	1.9	98.1	43.1
13	2	0	43	45	-	4.4	0.0	95.6	60.5	0	0	53	53	-	0.0	0.0	100.0	43.4
14	1	0	40	41	-	2.4	0.0	97.6	62.5	0	0	21	21	-	0.0	0.0	100.0	47.6
15	0	0	32	32	-	0.0	0.0	100.0	53.1	0	0	30	30	-	0.0	0.0	100.0	43.3
16	1	0	86	87	-	1.1	0.0	98.9	51.2	0	0	103	103	-	0.0	0.0	100.0	54.4
17	0	0	5	5	-	0.0	0.0	100.0	100.0	0	0	36	36	-	0.0	0.0	100.0	30.6
Total	91	51	1,356	1,498						8	6	930	944					

^{1/} Percent of total females.

M = males

T = transitionals

F = females

Table 4 (continued)

Set 9										
	Down		0250					Loran 2H4 3283		
	Up		0630					Depth 70 fms.		
	Elapsed		3:40							
Pot No.	Numbers			Total	Shrimp/lb	Percent			Gravid ^{1/}	
	M	T	F			M	T	F		
1	0	0	0	0	0	0.0	0.0	0.0	0.0	
2	2	0	19	21	-	9.5	0.0	90.5	21.1	
3	4	1	74	79	-	5.1	1.3	93.7	23.0	
4	1	0	116	117	-	0.9	0.0	99.1	23.3	
5	1	0	87	88	-	1.1	0.0	98.9	31.0	
6	0	0	107	107	-	0.0	0.0	100.0	35.5	
7	2	0	117	119	-	1.7	0.0	98.3	41.0	
8	1	0	57	58	-	1.7	0.0	98.3	45.6	
9	1	0	52	53	-	1.9	0.0	98.1	40.4	
10	0	0	17	17	-	0.0	0.0	100.0	47.1	
11	1	0	35	36	-	2.8	0.0	97.2	37.1	
12	0	0	42	42	-	0.0	0.0	100.0	35.7	
13	0	0	23	23	-	0.0	0.0	100.0	39.1	
14	1	0	17	18	-	5.6	0.0	94.4	35.3	
15	0	0	58	58	-	0.0	0.0	100.0	46.6	
16	0	0	27	27	-	0.0	0.0	100.0	40.7	
17	0	0	0	0	0	0.0	0.0	0.0	0.0	
Total	14	1	848	863						

^{1/} Percent of total females.

M = males

T = transitionals

F = females

Table 5. Pink shrimp sex, numbers and percent by pot and set.
Cruise 68-1 March 19-21, 1968

Pot no.	Set 1								Set 2							
	Down 1830				Loran 2H4 3290				Down 1845				Loran 2H4 3290			
	Up 2135				Depth 75 fms.				Up 2200				Depth 76 fms.			
Elapsed 3:05								Elapsed 3:15								
	M	T	F	Total	%	%	%	%	M	T	F	Total	%	%	%	%
								Gravid								Gravid
1	0	0	6	6	0.0	0.0	100.0	0.0	41	24	226	291	14.1	8.2	77.7	16.4
2	8	7	111	126	6.3	5.6	88.1	21.6	32	4	553	589	5.4	0.7	93.9	30.9
3	27	8	243	278	9.7	2.9	87.4	26.3	6	4	97	107	5.6	3.7	90.7	27.8
4	10	2	218	230	4.3	0.9	94.8	30.7	3	4	134	141	2.1	2.8	95.0	24.6
5	5	2	106	113	4.4	1.8	93.8	24.5	2	0	63	65	3.1	0.0	96.9	11.1
6	2	1	24	27	7.4	3.7	88.9	45.8	2	1	38	41	4.9	2.4	92.7	21.1
7	3	2	32	37	8.1	5.4	86.5	40.6	0	2	25	27	0.0	7.4	92.6	56.0
8	2	0	25	27	7.4	0.0	92.6	48.0	0	0	7	7	0.0	0.0	100.0	42.9
9	1	0	22	23	4.3	0.0	95.7	40.9	2	0	4	6	33.3	0.0	66.7	25.0
10	0	1	19	20	0.0	5.0	95.0	42.0	0	0	4	4	0.0	0.0	100.0	25.0
11	1	0	15	16	6.3	0.0	93.8	33.3	1	0	6	7	14.3	0.0	85.7	66.7
12	0	0	4	4	0.0	0.0	100.0	75.0	0	0	0	0	0.0	0.0	0.0	0.0
13	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
14	0	0	2	2	0.0	0.0	100.0	100.0	0	0	0	0	0.0	0.0	0.0	0.0
15	0	0	0	0	0.0	0.0	0.0	0.0	0	0	1	1	0.0	0.0	100.0	0.0
16	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
17	1	0	3	4	25.0	0.0	75.0	66.7	0	0	12	12	0.0	0.0	100.0	41.7
Total	60	23	830	913					89	39	1,170	1,298				

M = males
T = transitionals
F = females

Table 5 (continued)

Pot no.	Set 3								Set 4							
	Down 2155				Loran 2H4 3290				Down 2215				Loran 2H4 3290			
	Up 0145				Depth 75 fms.				Up 0215				Depth 76 fms.			
Elapsed 3:50								Elapsed 4:00								
	M	T	F	Total	% M	% T	% F	% Gravid	M	T	F	Total	% M	% T	% F	% Gravid
1	0	0	23	23	0.0	0.0	100.0	43.5	5	0	202	207	2.4	0.0	97.6	47.5
2	1	0	111	112	0.9	0.0	99.1	38.7	2	0	117	119	1.7	0.0	98.3	51.3
3	2	0	102	104	1.9	0.0	98.1	31.4	0	0	31	31	0.0	0.0	100.0	41.9
4	0	0	93	93	0.0	0.0	100.0	38.7	2	0	80	82	2.4	0.0	97.6	36.3
5	1	0	64	65	1.5	0.0	98.5	35.9	0	0	10	10	0.0	0.0	100.0	40.0
6	0	0	9	9	0.0	0.0	100.0	33.3	0	0	11	11	0.0	0.0	100.0	9.1
7	0	0	7	7	0.0	0.0	100.0	28.6	0	0	19	19	0.0	0.0	100.0	42.1
8	0	0	11	11	0.0	0.0	100.0	63.6	0	0	6	6	0.0	0.0	100.0	33.3
9	1	0	3	4	25.0	0.0	75.0	33.3	0	0	2	2	0.0	0.0	100.0	100.0
10	0	0	6	6	0.0	0.0	100.0	33.3	0	0	0	0	0.0	0.0	0.0	0.0
11	0	0	2	2	0.0	0.0	100.0	50.0	0	0	9	9	0.0	0.0	100.0	44.4
12	0	0	6	6	0.0	0.0	100.0	50.0	0	0	2	2	0.0	0.0	100.0	50.0
13	1	0	2	3	33.3	0.0	66.7	100.0	0	0	2	2	0.0	0.0	100.0	100.0
14	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
15	0	0	1	1	0.0	0.0	100.0	0.0	0	0	1	1	0.0	0.0	100.0	0.0
16	0	0	1	1	0.0	0.0	100.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
17	0	0	1	1	0.0	0.0	100.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
Total	6	0	442	448					9	0	492	501				

M = males
T = transitionals
F = females

Table 5. (continued)

Pot no.	Set 5								Set 6							
	Down 0240 Up 0525 Elapsed 2:45				Loran 2H4 3290 Depth 75 fms.				Down 0210 Up 0605 Elapsed 3:55				Loran 2H4 3293 Depth 76 fms.			
	M	T	F	Total	%	%	%	%	M	T	F	Total	%	%	%	%
1	2	1	43	46	4.3	2.2	93.5	44.2	0	0	45	45	0.0	0.0	100.0	26.7
2	2	2	65	69	2.9	2.9	94.2	55.4	2	2	195	199	1.0	1.0	98.0	43.2
3	0	1	138	139	0.0	0.7	99.3	46.4	1	0	33	34	2.9	0.0	97.1	30.3
4	2	1	103	106	1.9	0.9	97.2	35.9	0	0	111	111	0.0	0.0	100.0	33.3
5	0	0	4	4	0.0	0.0	100.0	50.0	0	0	14	14	0.0	0.0	100.0	42.9
6	0	0	24	24	0.0	0.0	100.0	44.4	0	0	3	3	0.0	0.0	100.0	33.3
7	0	0	1	1	0.0	0.0	100.0	0.0	0	0	18	18	0.0	0.0	100.0	44.4
8	0	0	3	3	0.0	0.0	100.0	66.7	0	0	3	3	0.0	0.0	100.0	66.7
9	0	0	5	5	0.0	0.0	100.0	60.0	0	0	1	1	0.0	0.0	100.0	100.0
10	0	0	3	3	0.0	0.0	100.0	33.3	0	0	3	3	0.0	0.0	100.0	33.3
11	0	0	0	0	0.0	0.0	0.0	0.0	0	0	3	3	0.0	0.0	100.0	66.7
12	0	0	0	0	0.0	0.0	0.0	0.0	0	0	1	1	0.0	0.0	100.0	0.0
13	0	0	7	7	0.0	0.0	100.0	57.1	0	0	1	1	0.0	0.0	100.0	0.0
14	0	0	2	2	0.0	0.0	100.0	100.0	0	0	3	3	0.0	0.0	100.0	33.3
15	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
16	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
17	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0
Total	6	5	398	409					3	2	434	439				

M = males
T = transitionals
F = females

Table 6. Summary of bottom tow data cruise 68-1.

Date	Tow no.	Loran (2H4)		Bottom depth (fms)	Time down PST	Tow time (min)	Shrimp catch (lbs)	Shrimp per Pound	% M	% T	% F	% Gravid	Fish catch (lbs)
		Down	Up										
2-7-68	1	3280	3292	69	1648	37	150	94	26.2	0.0	73.8	100.0	408
2-8-68	2	3312	3303	69-71	1030	33	150	81	19.0	0.0	81.0	99.0	188
	3	3314	3302	72	1201	30	400	80	14.5	0.0	85.5	100.0	326
	4	3314	3302	73	1334	26	300	79	16.5	0.0	83.5	98.2	238
3-9-68	1	3272	3282	70-71	1025	30	200	82	0.7	2.6	96.7	66.0	105
	2	3270	3256	75	1140	30	500	85	11.9	3.7	84.4	90.4	210
	3	3252	3263	75	1328	30	350	90	18.3	4.2	77.5	74.5	100
3-21-68	8	3285	3270	76-77	0820	30	350	98	9.3	4.6	86.1	32.2	125
	9	3278	3290	76	0928	30	450	100	10.1	2.6	87.3	31.2	140
9 Tows													

Table 7. Summary of midwater tow data, cruise 68-1.

Date	Tow No.	Loran (2H4)		Bottom depth (fms)	Time down PST (min)	Tow time (min)	Warp length (fms) ^{1/}	Recorder depth (fms)	Shrimp catch (lbs)	Shrimp per pound	% M	% T	% F	% Gravid	Fish catch (lbs)	Remarks
		Down	Up													
2-28-68	1	3275	3258	71	1915	28	200	60.5	4	106	31.7	3.6	64.7	87.8	½	
	2	3275	3265	72-75	2105	31	0	2.7	½	156	77.5	7.0	15.5	90.9	¼	
	3	3265	3280	75-73	2150	31	25	9.7	1½	155	75.1	5.5	19.3	71.4	½	
	4	3282	3295	71-70	2310	31	50	8.3	8	105	37.2	4.3	58.4	63.0	0	Doors tangled
3-9-68	4	3268	3255	75-76	1948	31	25	6.7	0	0	0.0	0.0	0.0	0.0	0	
	5	3258	3275	76	2030	30	50	9.8	0	0	0.0	0.0	0.0	0.0	0	
	6	3280	3300	75-72	2114	30	100	27.0	0	0	0.0	0.0	0.0	0.0	0	
3-20-68	1	3288	3269	77	1932	30	50	9.8	12	94	17.9	4.2	77.9	29.7	½	
	2	3268	3282	78	2020	30	75	14.2	11	93	9.1	5.5	84.5	41.5	¾	
	3	3278	3262	78	2110	25	25	5.2	5	94	11.4	8.8	79.8	16.5	1	
	4	3268	3282	77-78	2209	29	150	34.2	½	No Sample					¾	
	5	3280	3261	78-79	2306	30	225	58.5	1	No Sample					9½	Hit bottom
	6	3258	3273	79	0010	29	50	10.0	8	116	46.7	5.8	47.5	23.1	1	
	7	3278	3262	78-80	0102	30	75	--	33	139	59.0	4.0	37.0	50.0	1	
	14 Tows															

^{1/} Does not include 20 fathoms of bridle.