

FISH COMMISSION OF OREGON  
TRAWL INVESTIGATION

Report of Cruise 67-7, Dover Sole

Vessel: MV Sunrise, chartered trawler.

Dates: August 2-6, 1967

- Objectives:
1. Determine distribution of Dover, English, petrale, rex, and slender soles and sand dabs, with emphasis on juveniles.
  2. Collect Dover sole scales and otoliths for age comparison.
  3. Collect Dover sole scales and juvenile petrale sole otoliths for age analysis.

Methods: Nineteen tows were made with a small fish trawl. The trawl had a 47-foot headrope and a 62-foot ground rope. The wings and body were made of 2-1/2-inch mesh (stretched measure) and the cod end was of 1-1/2-inch mesh. The cod end contained a line of 1-1/8-inch mesh. Each wing was connected to its respective otter board by a 30-foot bridle. A steel 5/16-inch, 60-foot tickler chain completed the net.

Tows were made on two track lines at 10-fathom intervals between the Columbia River and Tillamook Head (Figure 1).

Results: Table 1 lists each tow by depth, Loran position, time fished, and catch. Weights are given for Dover, English, and petrale sole and Pacific ocean perch. Weights for other species are grouped into rockfish, flatfish, round fish, and miscellaneous fish. Table 2 lists the scientific and common names of fish in each group.

Depth of tows ranged from 6 to 165 fathoms. Lengths of tows ranged from 10 to 20 minutes, but were most frequently 15 minutes. Tables 3-8 show size composition by number caught per 30 minutes of trawling by tow for Dover, English, petrale, rex, and slender sole and Pacific sand dabs. English, Dover, and petrale sole were sexed except for some juvenile fish which were listed as sex unknown. A total of 7,163 fish were measured for length composition. Scales were taken from 234 Dover sole for age analysis and 88 scales and otoliths for age comparison. Otoliths from 16 juvenile petrale sole were collected for age analysis.

Personnel: Robert Demory, Party Chief, 8/2-6/67  
Terry Link, Biologist, 8/2-6/67  
Gilbert Lance, Trainee, 8/2-6/67  
Rudy Lovvold, Vessel Captain  
Mickey Atwood, Crewman

Terry Link  
Fish Commission of Oregon  
Research Division  
September 12, 1967

Distribution:

Schoning & Weberg  
Clackamas File - 2  
Loeffel  
Dayton L. Alverson  
PMFC

Commissioners  
Astoria  
Newport  
Harvey L. Moore  
WDF - Olympia, Library

Portland Main File  
Brookings  
Charleston  
FRBC

Meehan  
Van Hying  
Dr. Wm. Pearcy  
Dr. Wm. McNeil

Figure 1. Relative location of stations, Cruise 67-7.

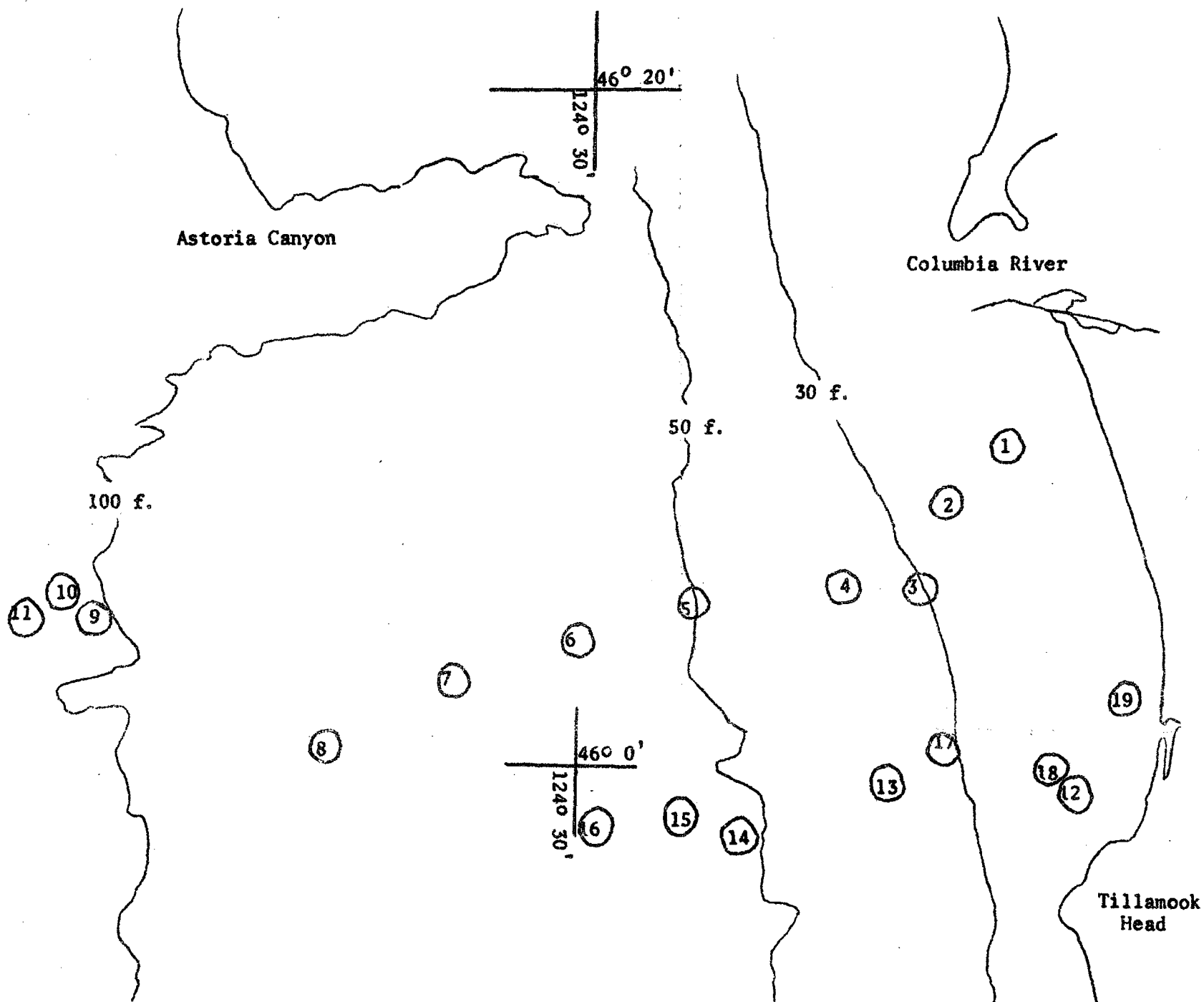


Table 1. Tow data and pounds of catch by station, cruise 67-7.

No.	Depth	Time	Loran		Petrale	English	Dover	Pacific ocean perch	Rock- fish	Flat- fish	Round fish	Misc. fish
			Start-End (2H4)	Start-End (2H5)								
1	10-11	15	3470-3480	3485-3484	17	50				38		13
2	20	15	3460-3452	3477-3477	4	16	1			183	8	12
3	30-32	17	3420-3430	3476-3476	8	45	15			306	3	23
4	40-42	17	3420-3426	3472-3472	1	17	61			244	239	27
5	51	13	3412-3420	3457-3457	1		38		T <sup>1/</sup>	199	103	9
6	61-63	11	3405-3399	3448-3448			22		11	34	116	29
7	71-72	11	3382-3378	3439-3439			60		27	73	63	23
8	80	10	3352-3348	3425-3425			14		18	49	16	23
9	121	20	3395-3382	3400-3400			11	228	59		44	1
10	140-135	20	3400-3393	3393-3393			65	150	97	25	106	3
11	168-165	20	3390-3383	3394-3394			40	200	85	12	43	10
12	11-13	16	3352-3357	3482-3482	3	93	4		19	15	51	1
13	41-43	15	3353-3359	3471-3469	2	10	41		5	240	50	27
14	52-53	16	3332-3337	3457-3459	1	1	20			167	416	45
15	61-63	15	3335-3341	3454-3453			28		16	95	280	51
16	70-73	15	3331-3337	3447-3446	5		30		5	132	14	30
17	33-34	10	3360-3365	3474-3474	3	17	2			63	7	10
18	17	17	3355-3360	3481-3481	3	14	20			75	20	2
19	6-8	16	3390-3394	3487-3486		4				13	269	

<sup>1/</sup> T = trace, an observable amount but not enough to weigh, usually less than a pound.

Table 2. Common and scientific names of fishes caught on cruise 67-7.

Common name	Scientific name
Petrale sole	<u>Eopsetta jordani</u>
Dover sole	<u>Microstomus pacificus</u>
English sole	<u>Parophrys vetulus</u>
Pacific ocean perch	<u>Sebastes alutus</u>
Rockfishes:	
Blackmouth rockfish	<u>Sebastes crameri</u>
Splitnose rockfish	<u>S. diploproa</u>
Yellowtail rockfish	<u>S. flavidus</u>
Rosethorn rockfish	<u>S. helvomaculatus</u>
Black rockfish	<u>S. melanops</u>
Redstripe rockfish	<u>S. proriger</u>
Yellowmouth rockfish	<u>S. reedi</u>
Flag rockfish	<u>S. rubrivinctus</u>
Sharpchin rockfish	<u>S. zacentras</u>
Shortspine channel rockfish	<u>Sebastolobus alascanus</u>
Flatfishes:	
Pacific sanddab	<u>Citharichthys sordidus</u>
Arrowtooth flounder	<u>Atheresthes stomias</u>
Rex sole	<u>Glyptocephalus zachirus</u>
Flathead sole	<u>Hippoglossoides elassodon</u>
Pacific halibut	<u>Hippoglossus stenolepis</u>
Bellingham sole	<u>Isopetta isolepis</u>
Slender sole	<u>Lyopsetta exilis</u>
Starry flounder	<u>Platichthys stellatus</u>
Sand sole	<u>Psettichthys melanastictus</u>
Round fishes:	
Northern anchovy	<u>Engraulis mordax</u>
Smelts	<u>Osmeridae</u>
Pacific cod	<u>Gadus macrocephalus</u>
Pacific hake	<u>Merluccius productus</u>
Pacific tomcod	<u>Microgadus proximus</u>
Walleye pollack	<u>Theragra chalcogrammus</u>
Sablefish	<u>Anoplopoma fimbria</u>
Lingcod	<u>Ophiodon elongatus</u>
Miscellaneous fishes:	
Pacific hagfish	<u>Polistotrema stouti</u>
Spiny dogfish	<u>Squalus acanthias</u>
Big skate	<u>Raja binoculata</u>
Longnose skate	<u>R. rhina</u>
Starry skate	<u>R. stellulata</u>
Ratfish	<u>Hydrolagus colliei</u>
Lanternfish	<u>Myctophidae</u>
Staghorn sculpin	<u>Leptocottus armatus</u>
Sea poachers	<u>Agonidae</u>
Showy snailfish	<u>Liparis pulchellus</u>
Eel pouts	<u>Zoarcidae</u>

Table 3. Size composition of Dover sole (numbers caught per 30 minutes trawling) by sex and tow, cruise 67-7.

Length (cm)	Tow number													
	2		3			4			5		6		7 <sup>2/</sup>	
	UK <sup>1/</sup>	F	UK	M	F	UK	M	F	M	F	M	F	M	F
5														
6														
7														
8			2						2					
9	4		18			41			2					
10	4		44			0			0					
1	2		22		2	65			0					
2	0					39			2					
3	0				8	7	11	11	5	5				
4	0			8	4		7	0	2	0				
5	0			14	12		11	14	0	0				
6	0			16	12		11	7	2	0	3			
7	2			8	12		14	0	0	0				
8				8	6		4	0	0	0				
9				4	8		0	0	0	0				
20				12	2		4	2	0	2				
1				8	14		2	2	2	2				
2				4	6		0	9	2	0	3			
3				4	2		5	2	2	0	3			
4				4	0		9	4	9	0				
5				4	2		7	2	5	2				
6				0	0		4	0	7	2				
7				0	0		2	4	5	7				
8				2	0		4	4	12	0				
9				0	0		7	2	7	5	5	5		
30				0	0		9	9	0	2	3			
1				2	2		9	2	7	2	3	3		
2				0	0		4	2	0	5				
3				0	0		5	4	5	2	3	8	5	
4				0	0		4	9	2	0	3	3	3	3
5				0	0		4	5	2	2	3	5	3	3
6		2		0	0		2	0	2	5			5	5
7				0	0		2	2		5			3	8
8				0	0		2	0		0			3	3
9				0	0			4		2			8	
40				2	2			0		0			3	3
1								0		5			3	8
2								4		1				3
3								0		0				3
4								2		0				5
5										0				3
6										0				3
7										0				3
8										2				
9														
50														
Total	12	2	86	96	94	152	143	108	84	59	29	41	41	65

<sup>1/</sup> UK = sex unknown.

<sup>2/</sup> Length /frequency 51 /3, 52 /3, 55 /3, 56 /3, 58 /3.

Table 3. Size composition of Dover sole (numbers caught per 30 minutes trawling) by sex and tow, cruise 67-7 (continued).

Length (cm)	Tow number												
	8		9		10		11		12		13		
	M	F	M	F	M	F	M	F	M	F	UK	M	F
5													
6													
7													
8													2
9													6
10													12
11													2
12													
13													
14													2
15													8
16													14
17													4
18													16
19													20
20													2
21													6
22													6
23													
24													
25													
26													
27													
28													
29													
30													
31													
32													
33													
34													
35													
36													
37													
38													
39													
40													
41													
42													
43													
44													
45													
46													
47													
48													
49													
50													
Total	12	15	55	17	40	20	60	8	4	8	22	182	76

Table 3. Size composition of Dover sole (numbers caught per 30 minutes trawling) by sex and tow, cruise 67-7 (continued).

Length (cm)	Tow number											
	14			15		16 <sup>3/</sup>		17			18	
	UK	M	F	M	F	M	F	UK	M	F	M	F
5												
6												
7												
8												
9	2				2			3				
10	2											
11	2							6			2	
12												
13		2	2									
14		2										
15		6						6				
16												
17		2								6		
18		2										2
19		2	4							3	2	
20		4	2		2			3	6			2
21		8						3				2
22		2	2									2
23		2	2		2							
24		4								3		2
25												2
26		6			2			3				2
27		6	4		4	2	2					4
28		4	2		2	8						4
29		4	2		4	4					2	4
30					4	2		3				
31		4	2		4		2				2	
32		6	6		6	2	2				4	4
33					4	2	2	6			2	2
34					4	6	2	8			2	4
35					6	4	2				2	
36					2	2	2	6			2	
37						2		4				2
38						2	6	4				
39					2		4	2				2
40					2		2	10				2
41								2				
42								2				
43			2				4	4				
44												2
45												
46												
47								2				
48								2				
49								2				
50								2				
Total	6	66	30	44	44	24	72	9	18	18	20	44

<sup>3/</sup> Length/frequency 51/2, 53/2, 56/4, 58/2.

Table 4. Size composition of English sole (numbers caught per 30 minutes of trawling) by sex and tow, cruise 67-7.

Length (cm)	Tow number										
	1			2		3		4		12	
	UK	M	F	M	F	M	F	M	F	M	F
5											
6											
7											
8											
9	2										
10											
11											
12	6	2		8	2						
13	12	6		26	8	2					
14	6	2	4	24	4	2					
15	36	2	2	26	20						
16	18	12	10	18	6	2					
17	22	12	2	18	6		2				
18	18	4		8	6	4					
19	14	2	2	2							
20	2	2		2		4					
21	10	8				2					
22	8	4	2	4	2	18				4	
23	4	6	4	6		14	2			4	
24		6	2	4	2	5	4			6	4
25			2	10		12	7			8	
26		6		4	4	12	4			8	4
27		6	12	4	2	12	4	2		17	8
28		2	4	4	4	21	2	2		47	6
29		2	2	4		21	2	9	2	38	
30				2	2	12	5	7		8	2
31			2	2		4		4		6	11
32			6	2		2				4	8
33		4	6				4				6
34			4		2		4				19
35			2								17
36			2				2	4			13
37			2				2	2			2
38			8				4	4			2
39			8								4
40			6								6
41			4					2			
42			2					2			
43											4
44											
45											
Total	158	88	100	174	70	149	48	24	16	150	116



Table 4. Size composition of English sole (numbers caught per 30 minutes of trawling) by sex and tow, cruise 67-7 (continued).

Length (cm)	Tow number										
	13		14		17		19			18	
	M	F	M	F	M	F	UK	M	F	M	F
5											
6											
7											
9											
10											
1											
2								4			
3								9			
4								13			
5								11			
6								6			
7									2		
8								2			
9											2
20											
1											
2											
3											
4						9					2
5		4				9					
6	2					6	3				2
7	2	2				9	3				
8	2	2	2			15	3				
9	2					3					2
30	4					3					
1	6	2									2
2	4		2				3				2
3							3				
4							6				
5	2										
6											
7											
8									2		
9											
40											
1											
2											
3											
4											
5											
<b>Total</b>	24	10	4	0	54	21	45	0	4	6	6

Table 5. Size composition of petrale sole (numbers caught per 30 minutes of trawling) by sex and tow, cruise 67-7.

Length (cm)	Tow number														
	1		2	3		4	13	Unknown	14	16 <sup>2</sup> /	17		18		
	M	F	UK	M	F	F	M	F1/	F	F	UK	M	F	M	F
5															
6															
7															
8															
9															
10			2												
11			2												
12			10												
13			4												
14			4												
15			2												
16															
17															
18															
19							2				3			4	
20															
21													3		
22								4							
23				2				2						2	
24				2											
25															2
26															
27															
28								2					3		
29															
30		2													2
31				4				2	2						2
32				2		2					3				
33		2		2		2						3			
34		2													
35															
36				2				2							
37		2		2											
38	2														
39	2														
40	2	2													
41					2										
42															
43	4														
44															
45															
<b>Total</b>	10	10	24	16	2	4	2	14	2	2	3	3	9	6	6

1/ Length/frequency 51/2.

2? Length/frequency 49/2.

Table 6. Size composition of rex sole (number caught per 30 minutes trawling) by tow, cruise 67-7.

Length (cm)	Tow number							
	1	2	3	5	7	10	13	
5								
6								
7								
8						14	2	
9				18		11	2	
10				18		11		12
11			14	12		5		12
12			34	23		8		8
13			39	88		14	2	24
14			41	74		8		24
15			55	166		3		50
16		4	111	171		8		60
17			155	196				48
18		10	196	155		5		96
19		6	214	111				80
20		18	145	134		11		90
21		4	146	145		22	2	100
22		12	191	106		30		156
23		10	164	111		35		114
24		26	132	78		38	2	102
25		22	132	104		46		94
26		16	88	58		65	2	90
27		28	97	81		52	3	86
28		14	67	35		33	3	62
29		8	81	46		46	5	72
30	2	10	41	14		30	8	44
31	2	12	21	21		27	6	28
32	2	4	5	9		16	11	10
33	4	6	12	7		11	2	10
34	8	2	7	7		5		14
35	4	2	2	5		8	3	6
36	2						2	6
37				2		5		
38								
39								
40								
<b>Total</b>	<b>24</b>	<b>214</b>	<b>2,190</b>	<b>1,995</b>	<b>567</b>	<b>55</b>	<b>1,548</b>	

Table 7. Size composition of sanddabs (number caught per 30 minutes of trawling) by tow, cruise 67-7.

Length (cm)	Tow number				
	1	2	5	13	17
6	4	44			3
7	6	206		12	18
8	2	40			3
9	4	10		16	12
10	26	56	5	74	51
11	34	136	5	140	75
12	16	148		82	39
13	6	16	5	12	15
14		10	9	38	3
15		38	12	26	24
16		24	30	10	15
17		28	53	48	6
18		38	81	84	21
19		64	76	118	42
20		100	58	80	51
21		74	28	86	69
22		116	7	64	36
23		136	2	38	30
24		108	2	50	15
25		42	2	62	6
26		62	2	28	3
27		32	5	20	3
28		30		16	15
29		12		16	3
30		6	2		
31				6	3
32				2	
33					
34					
35					
<b>Total</b>	<b>100</b>	<b>1,576</b>	<b>384</b>	<b>1,128</b>	<b>561</b>

Table 8. Size composition of slender sole (number caught per 30 minutes of trawling) by tow, cruise 67-7.

Length (cm)	Tow number			
	3	5	6	8
6				
7			3	
8				
9				
10			5	
1		25	11	
2	4	12	25	3
3	5	44	38	3
4	4	53	46	12
5	7	58	32	27
6	4	48	38	30
7	12	46	35	24
8	5	78	44	15
9	5	60	41	33
20	11	2	52	36
1	4	16	25	33
2	7	16	14	24
3		5	35	33
4		5	19	33
5	2	2	16	18
6		5	25	15
7		5	22	3
8			14	3
9			3	12
30			8	
1				
2				
3				
4				
5				
<b>Total</b>	<b>70</b>	<b>480</b>	<b>551</b>	<b>357</b>