HMAP Dataset 3
SE Australian Trawl Fishery III

Fish (various) landings and fishing effort, South East Australia, 1951-1957

Supporting Documentation

Red Funnel Fishing Trawler *Durraween*

Summary

Dataset Title:	SE Australian Trawl Fishery III
HMAP Case Study:	South East Australian Shelf and Slope
Large Marine Ecosystem:	42: Southeast Australian Shelf
Subject:	Fish (various) landings and fishing effort, South East Australia, 1951-1957
Data Provider:	Neil Klaer Commonwealth Scientific and Industrial Research Organisation (CSIRO) Division of Marine Research GPO Box 1538 Hobart, Tasmania 7001 Australia e-mail: neil.klaer@csiro.au
Data Editor:	Michaela Barnard, MHSC, University of Hull m.g.barnard@hull.ac.uk
Extent:	57,246 records
Keywords:	fisheries statistics; History of Marine Animal Populations; trawling; overfishing; Australian fishing industry

Citation

(a) The dataset: please cite as follows: N. Klaer ed. 'South East Australian Trawl Records, 1951-1957' in M.G Barnard & J.H Nicholls (comp.) *HMAP Data Pages* (www.hull.ac.uk/hmap)

(b) Supporting documentation: please cite as follows: N. Klaer, 'HMAP Dataset 3: SE Australian Trawl Fishery III, Supporting Documentation', in M.G Barnard & J.H Nicholls (comp.) *HMAP Data Pages* (www.hull.ac.uk/hmap)

Acknowledgements:

Funding for the initial data collection and processing was provided by Australia's Fishing Industry Research and Development Corporation (FIRDC). Support was also provided by the Bureau of Resource Sciences (BRS) and CSIRO, while the data processing described in this document was undertaken as part of a project based at the University of Canberra. The data were edited and rendered compatible with the HMAP and OBIS schema by the HMAP Data Pages team at Hull.

Contents

1. Introduction

On 28 November 1991, the New South Wales Department of Agriculture and Fisheries provided historical data relating to the South East Fishery (SEF) to the Bureau of Resource Sciences (BRS) in accordance with the Fishing Industry Research and Development Corporation (FIRDC)-funded 'historic SET catch data' project. The data were originally collected by CSIRO and handed over to NSW Fisheries when CSIRO ceased work in the 1960s on what was then known as the 'South East Trawl Fishery'. These data cover the periods 1918-1923, 1937-1943 and 1952-1957. No documentation exists for these data except for a simple description of the data field names. This document describes the processing carried out, and the assumptions made, to convert the data into a format suitable for inclusion in the Australian Fishing Zone Information System (AFZIS). This format, in turn, was adapted to render the data compatible with the HMAP/OBIS schema.

Data: 1951-1957

(a) *Data Description*

The accompanying field description was as follows:

Table 1: 1951-1957 Data Description

Field	Width	Position	Type	Comments
trip information				
vessel-year	24	1-24	A	*
vessel code	2	25-26	N	
trip number	3	27-29	N	
depart date	6	30-35	N	(yymmdd)
depart time	4	36-39	N	(24 hr clock)
return date	6	40-45	N	(yymmdd)
return time	4	46-49	N	(24 hr clock)
No. of hauls	2	50-51	N	
No. Of species	2	52-53	N	#
last trip	1	54	N	(blank,0,1) %
species 1	2	55-56	N	*
sp 1 catch	8	57-64	N	(baskets)
species 2	2	65-66	N	*
sp 2 catch	8	67-74	N	(baskets)
.	.	.		
.	.	.		
species 10	2	145-146	N	*
sp 10 catch	8	147-154	N	(baskets)
haul information				
haul No.	2	155-156	N	
date	6	157-162	N	(yymmdd)
initial time	4	163-166	N	(24 hr clock)
final time	4	167-170	N	(24 hr clock)
area name	6	171-176	N	
area code	2	177-178	A	
initial depth	3	179-181	N	(fathoms)
final depth	3	182-184	N	(fathoms)
species 1	2	185-186	N	*
species 1 catch	6	187-192	N	(baskets)
.	.	.		
species 8	2	241-242	N	*
species 8 catch	6	243-248	N	(baskets)

Notes: A – Alphabetic; N – Numeric; * - Refer to code lists; # - No. Of species recorded in species catch (1)-(10); % - '1' denotes last trip for the year; 1 basket = 70lb

(b) *Data Quality*

A total of 21,120 individual haul records were available for the 1951-1957 period. A summary of the completeness of important fields is given in Table 17.

Table 2: Data Completeness 1951-1957

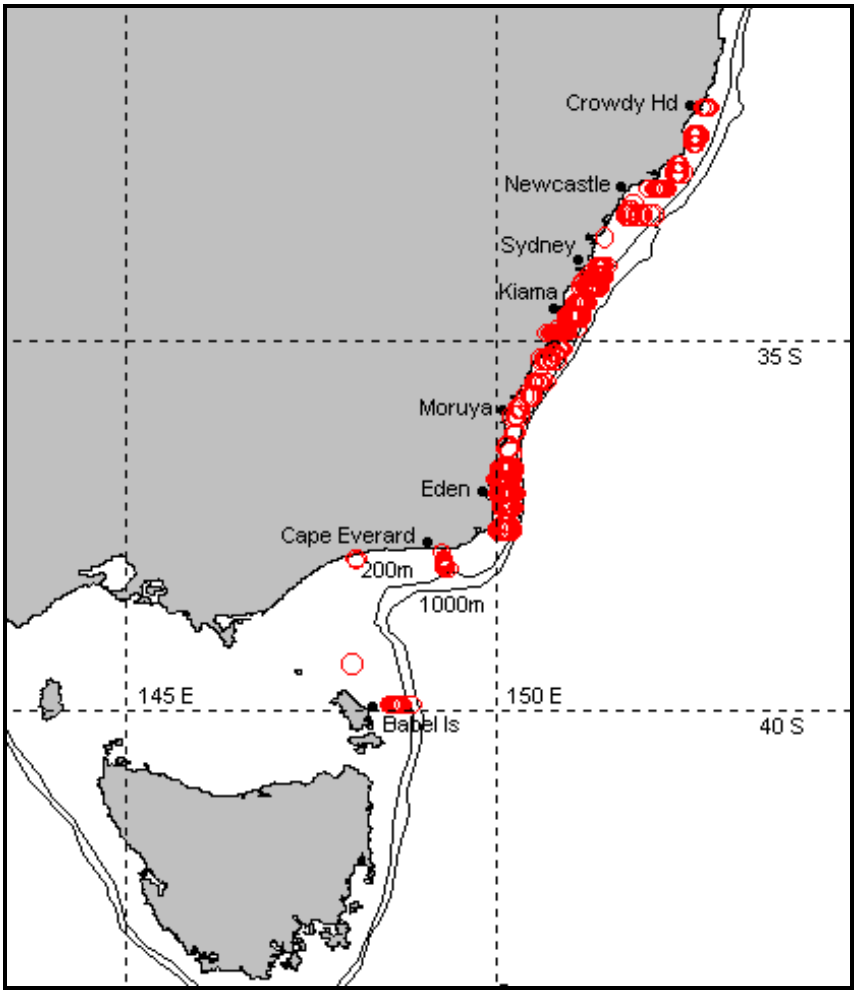
Field	Records	% of total
depth fished	19,345	91.60
species catch wt	21,120	100.00
position	0	0.00
vessel name	21,120	100.00
date	21,120	100.00

Note: depth applies to initial or final depth; position is both latitude and longitude; 100% of records had an encoded fishing ground

(c) *Catch Positions*

No hauls had latitude or longitude recorded. The six character fishing ground code was converted to estimated catch positions as described for the 1937-43. Figure 1 maps the resulting estimated catch positions.

Figure 1: Estimated Catch Positions, 1951-1957



(d) *Species Identification*

Two letter species codes were used in the data. The meaning of the codes was not documented, and interpretation was initially provided by Kevin Rowling of NSW Fisheries. This interpretation was supplemented with the following information from Roughley (1916) on trawler catches off NSW in 1915 and 1916:

'The total weight of fish captured from the commencement of operations, 7th June, 1915, till the end of July, 1916, was 2,326,481 lb. The species captured in greatest abundance, and arranged in that order, are as follows:--

1. Tiger or Deep-sea Flathead (*Neoplatycephalus macrodon*).
2. Sharp-beaked Gurnard (*Pterygotriglia polyommata*).
3. John Dory (*Zeus faber*).
4. Yellow leatherjacket (*Pseudomonacanthus ayraudi*).
5. Short Boarfish (*Zanclistius elevatus*).
6. Nannygai (*Trachichthodes affinis*).
7. Jackass Fish (*Dactylosparus macropterus*)
8. Morwong (*Dactylosparus carponemus*)
9. Barracouta (*Thyrsites atun*)
10. Thetis fish (*Neosebastes thetidis*)
11. Snapper (*Pagrosomus auratus*)
12. Red Gurnard Perch (*Helicolenus percoides*).'

Modern equivalents:
1 = tiger flathead (*Neoplatycephalus richardsoni*)
2 = latchet (*Pterygotriglia polyommata*)
4 = chinaman leatherjacket (*Nelusetta ayraudi*)
5 = long-finned boarfish (*Zanclistius elevatus*)
6 = redfish (*Centroberyx affinis*)
7 = jackass morwong (*Nemadactylus macropterus*)
8 = blue morwong (*Nemadactylus douglasi*)
11 = snapper (*Chrysophrys auratus*)
12 = ocean perch (*Helicolenus percoides*)

May and Maxwell (1986), others as historically listed

Table 3: Species Codes in the 1951-1957 Data, and Assumed Identification

Code	Name	CSIRO code	wt (kg)	records
DO	dory	264000	27,890	309
FL	tiger flathead	296001	1,118,890	13,672
GU	latchet	288006	77,380	890
JD	john dory	264004	21,470	415
JW	jewfish	354001	3,496	15
LA	latchet	288006	4,009	31
LJ	chinaman leatherjacket	465006	206,651	1,110
MA	mackerel	337002	6,097	6
MI	mixed	999999	699,981	9,124
MO	jackass morwong	377003	2,863,055	15,483
NA	redfish	258003	1,135,721	5,460
RA	rays	31000	160,826	1,818
SA	unknown SA	1	735	17
SD	silver dory	264002	2,605	13
SH	shark	18000	406,775	5,913
SN	snapper	353001	17,175	360

(e) *Total Catch by Year and Vessel*

Table 4: Total Retained Catch and Number of Hauls by Year

Year	Total Catch (kg)	Hauls
51	2,128	6
52	1,259,720	3,309
53	1,427,085	4,701
54	1,091,219	3,398
55	1,117,610	3,282
56	1,000,446	3,328
57	845,776	3,096

Total catch and number of hauls by vessel for the 1951-1957 data is given in Table 5. Discarded catch was not recorded.

Table 5: Catch and Number of Hauls by Vessel

Vessel	Retained wt	Discard wt	Operations
Alfie Cam	39,192	0	131
Goolgwai	410,235	0	1,380
Korowa	691,860	0	2,026
Maldanna	1,716,452	0	4,910
Mary Cam	44,883	0	171
Matong	1,634,927	0	4,934
Moona	1,464,698	0	5,197
Mulloka	741,737	0	2,371

(f) *Catch by Depth*

Total catches by depth interval (0=0-20) are given in Table 6. Depths have been converted from fathoms to metres. All recorded depths were within the ranges shown and no adjustments for mis-recording were made.

Table 6: Total Retained Catch Weight by Depth Interval

Depth (m)	Retained wt (kg)	Discard wt (kg)	Hauls
40	4,671	0	22
60	280,297	0	992
80	700,832	0	2,316
100	1,025,131	0	3,157
120	2,426,664	0	7,610
140	1,618,564	0	4,908
160	98,845	0	279
180	11,278	0	40
200	6,416	0	20
220	572	0	1

(g) *Catch by Year and Species*

Table 7: Total Retained Catch by Species by Year

Code	Species	1951	1952	1953	1954	1955	1956	1957
DO	dory	0	192	1,306	16,404	9,988	0	0
FL	tiger flathead	1,398	299,378	239,326	193,149	150,900	155,555	79,184
GU	latchet	0	19,749	10,439	4,650	10,240	11,917	20,385
JD	john dory	0	8,610	5,295	2,268	2,043	1,464	1,790
JW	jewfish	0	0	0	0	0	2,732	764
LA	latchet	0	672	3,337	0	0	0	0
LJ	chinaman leatherjacket	0	80,614	43,271	13,199	22,826	31,387	15,354
MA	mackerel	0	6,097	0	0	0	0	0
MI	mixed	160	150,782	149,603	97,434	90,045	110,132	101,825
MO	jackass morwong	478	398,859	497,891	481,549	562,068	489,696	432,514
NA	redfish	0	180,896	348,210	207,601	179,204	114,507	105,303
RA	rays	0	17,775	47,601	35,834	32,651	19,270	7,695
SA	unknown sa	0	0	735	0	0	0	0
SD	silver dory	0	2,605	0	0	0	0	0
SH	shark	96	93,230	80,013	39,814	54,966	61,085	77,571
SN	snapper	0	1,727	1,912	669	4,121	4,111	4,635

3. Final Conversion Format

All data were converted into the following format. This is suitable for loading into the AFZIS system without the need for further data manipulation. The files were in dBase III databases, and have been converted into the HMAP schema.

Field	Field Name	Type	Width	Dec
1	BOAT_NAME	Character	15	
2	DATE	Numeric	6	
3	HAUL_NO	Numeric	2	
4	OP_NO	Numeric	2	
5	ST_TIME	Numeric	4	
6	EN_TIME	Numeric	4	
7	ST_DEP	Numeric	4	
8	EN_DEP	Numeric	4	
9	LAT	Numeric	6	2
10	LONG	Numeric	6	2
11	EFFORT	Numeric	6	2
12	RET_WT	Numeric	8	
13	DIS_WT	Numeric	8	
14	TOT_WT	Numeric	8	
	** Total **		84	

Field	Field Name	Type	Width	Dec
1	BOAT_NAME	Character	15	
2	DATE	Numeric	6	
3	HAUL_NO	Numeric	2	
4	OP_NO	Numeric	2	
5	SPECIES	Character	2	
6	SP_CODE	Numeric	6	
7	WT	Numeric	8	
	** Total **		41	

4. References

Colefax, A.N. 1934. A preliminary investigation of the natural history of the tiger flathead (*Neoplatycephalus macrodon*) on the south-eastern Australian coast. I. *Proc. Linn. Soc. NSW*. 59, 71-79.

May, J.L. and Maxwell, J.G.H. 1986. *Field guide to Trawl Fish from Temperate Waters of Australia*. CSIRO Division of Fisheries Research. 492pp.

Roughly, T.C. 1916. *Fishes of Australia and Their Technology*. William Applegate Gullick, Government Printer, Sydney. 296pp.

5. Outputs

The data have been used to inform a number of analyses, including:

N.L. Klaer, 'Steam trawl catches from south-eastern Australia from 1918 to 1957: trends in catch rates and species composition' *Marine and Freshwater Research*, 52(4), 399-410.

Abstract: Haul-by-haul steam trawler catch and effort data for 1918–23, 1937–43 and 1952–57, which cover a large portion of the history of steam trawling in the Australian South East Fishery, were examined in detail for the first time. There were 64371 haul records in total. The catch-rate for all retained catch combined shows a strong decline overall, with a brief recovery during World War II, probably due to increased retention of previously discarded species. The fishing fleet moved to more distant fishing grounds and deeper waters as the catch-rate declined. The catch-rates of the main commercial species followed a similar pattern in a number of regions within the fishery. The catch-rate of the primary target species – tiger flathead (*Neoplatycephalus richardsoni*) – dropped considerably from the early, very high, catch-rates. Chinaman leatherjacket (*Nelusetta ayraudi*) and latchet (*Pterygotrigla polyommata*) – species that were apparently abundant in the early years of the fishery, virtually disappeared from catches in later years. The appearance of greater catches of jackass morwong (*Nemadactylus macropterus*), redfish (*Centroberyx affinis*) and shark/skate during the war and afterwards was probably due to increased retention of catches of these species. The disappearance of certain species from the catch may be due to high fishing pressure alone, or to a combination of fishing pressure, changes in the shelf habitat possibly caused by the trawl gear, and environmental fluctuations.

Keywords: fisheries management, south east trawl fishery, CPUE, historical, steam trawler, stock assessment.