



**HMAP Dataset 1**  
**SE Australian Trawl Fishery I**  
*Fish (various) landings and fishing effort, South East Australia,  
1918-1923*

*Supporting Documentation*



Red Funnel Fishing Trawler *Durraween*



## HMAP Dataset 1: SE Australian Trawl Fishery I

### Summary

<b>Dataset Title:</b>	SE Australian Trawl Fishery I
<b>HMAP Case Study:</b>	South East Australian Shelf and Slope
<b>Large Marine Ecosystem:</b>	42: Southeast Australian Shelf
<b>Subject:</b>	Fish (various) landings and fishing effort, South East Australia, 1918-1923
<b>Data Provider:</b>	Neil Klaer Commonwealth Scientific and Industrial Research Organisation (CSIRO) Division of Marine Research GPO Box 1538 Hobart, Tasmania 7001 Australia e-mail: <a href="mailto:neil.klaer@csiro.au">neil.klaer@csiro.au</a>
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<b>Extent:</b>	36,102 records
<b>Keywords:</b>	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, 1918-1923' in M.G Barnard & J.H Nicholls (comp.) *HMAP Data Pages* ([www.hull.ac.uk/hmap](http://www.hull.ac.uk/hmap))

**(b) Supporting documentation:** please cite as follows: N. Klaer, 'HMAP Dataset 1: SE Australian Trawl Fishery I, Supporting Documentation', in M.G Barnard & J.H Nicholls (comp.) *HMAP Data Pages* ([www.hull.ac.uk/hmap](http://www.hull.ac.uk/hmap))

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## 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.

## 2. Data: 1918-1923

### (a) Data Description

The accompanying field description (and only documentation) was as follows:

**Table 1: 1918-1923 Data Description**

Field	Width	Position	Type	Comments
trip information				
vessel name	15	1-15	A	*
year of trip	4	16-19	N	
vessel code	2	20-21	N	*
trip number	3	22-24	N	
depart date	6	25-30	N	(yymmdd)
depart time	4	31-34	N	(24 hr clock)
return date	6	35-40	N	(yymmdd)
return time	4	41-44	N	(24 hr clock)
No. of hauls	2	45-46	N	
No. Of species	2	47-48	N	#
last trip	1	49	N	(blank,0,1) %
species 1	2	50-51	A	*
sp 1 catch	8	52-59	N	(baskets)
species 2	2	60-61	A	*
sp 2 catch	8	62-69	N	(baskets)
.	.	.	.	.
species 15	2	190-191	A	*
sp 15 catch	8	192-199	N	(baskets)
haul information				
haul No.	2	200-201	N	
date	6	202-207	N	(yymmdd)
initial time	4	208-211	N	(24 hr clock)
final time	4	212-215	N	(24 hr clock)
latitude	4	216-219	N	(deg,min)
longitude	4	220-223	N	(deg-100,min)
area	2	224-225	N	
initial depth	3	226-228	N	(fathoms)
final depth	3	229-231	N	(fathoms)
edible catch	5	232-236	N	(lbs)
trash catch	5	237-241	N	(lbs)
total catch	5	242-246	N	(lbs)
principal species 1	2	247-248	A	*
principal species 2	2	249-250	A	*
.	.	.	.	.
principal species 8	2	261-262	A	*

Notes: A – Alphabetic; N – Numeric; \* - Refer to code lists;  
 # - No. of species recorded in species catch (1) - (15);  
 % - '1' denotes last trip for the year; 1 basket = 70lb

A list of vessel codes was provided by NSW Fisheries as shown in Table 2. This is for all vessels for which historic data exists, and does not apply exclusively to 1918-1923.

**Table 2: Vessel Codes**

Vessel	Code
Gunundaal	1
Brolga	2
Koraaga	3
Goonambee	4
Goorangai	5
Dibbiu	6
Dureenbee	7
Alfie Cam	8
Olive Cam	9
Mary Cam	10
Beryl 2	11
Bareamul	12
Samuel Benbow	13
Goolgwai	14
Korowa	15
Maldanna	16
Moona	17
Matong	18
Mulloka	19

**(b) Data Quality**

A total of 12,041 individual haul records were available for the 1918-1923 period. A summary of the completeness of important fields is given in Table 3.

**Table 3: Data Completeness**

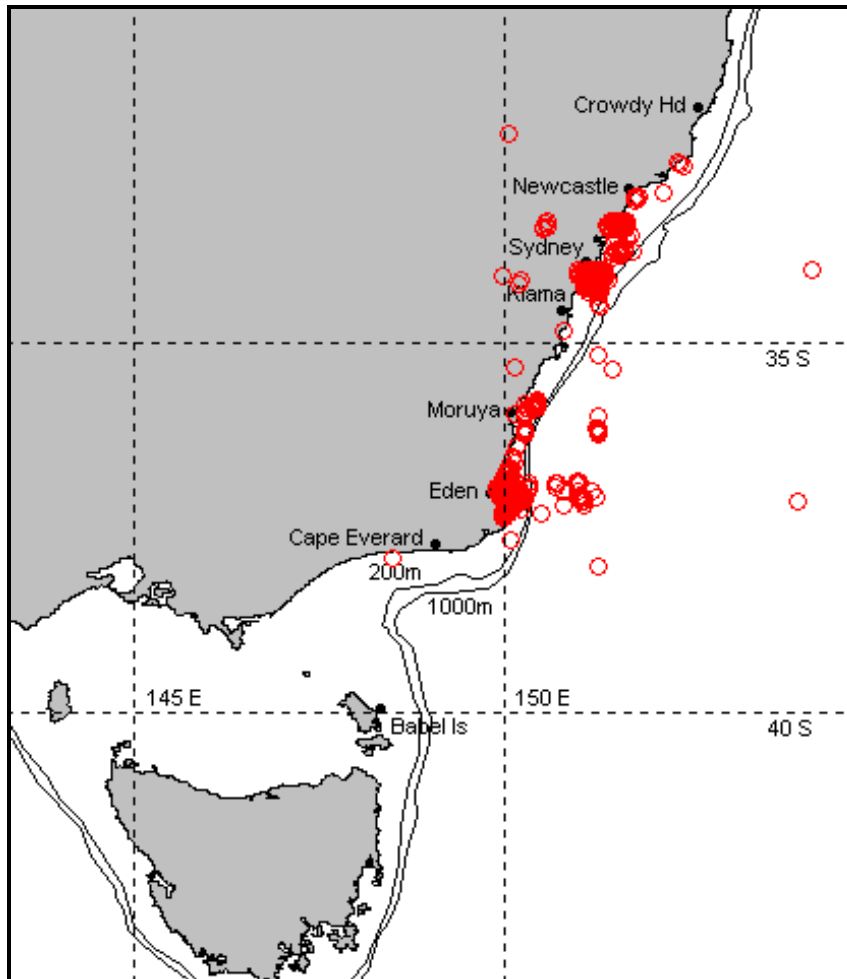
Field	Records	% of total
depth fished	12011	99.75
species catch wt	0	0.00
position	5364	44.55
vessel name	12041	100.00
date	12041	100.00

Note: depth applies to initial or final depth; position is both latitude and longitude

**(c) Catch Positions**

For hauls where a latitude and longitude was recorded, Figure 1 shows catch positions. Positions do not appear to have been recorded with great accuracy.

**Figure 1: Catch Positions, 1918-1923**



**(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 4: Species Codes in the 1918-1923 Data, and Assumed Identification**

Code	Name	CSIRO code	wt (kg)	records
FL	tiger flathead	296001	5,963,684	10,305
LJ	chinaman leatherjacket	465006	2,020,492	5,404
GU	latchet	288006	1,186,948	3,984
SK	skate	31000	252,141	1,484
BA	barracouta	439001	216,160	644
MI	mixed	999999	129,189	592
<i>blank</i>	unknown	0	67,698	675
JD	john dory	264004	47,886	473
MO	jackass morwong	377003	19,372	107
SA	unknown SA	1	13,283	234
NA	redfish	258003	11,574	47
SN	snapper	353001	9,019	72
DO	dory	264000	975	13
PE	ocean perch	287001	893	25
TH	thetis fish	287006	445	2

The code 'SA' was recorded as unknown but may refer to sand flathead.

There is no specific information on the catch weight by haul of individual species. For 3,236 records, the total trip weight by individual species was given. This applies to only 27% of all records, and represents an aggregate for a number of hauls within a trip. Accordingly, this information was not used.

Enough information was available, however, to determine approximate catch weights for individual species by haul. The fields shown in Table 1 called principal species 1 - 8 give the species code in weight order of the catch by individual species code for each haul. Particularly in past times, records for species which were not retained have not been kept in detail. The species code list for these data given in Table 4 also indicates that records have only been kept in this data set for edible species. It is therefore likely that the information on principal species refers to the retained catch. Assuming this, and that the catch of principal species 1 is twice that of principal species 2 which is twice that of 3 etc. allows the calculation of individual species catch weights (also given in Table 4).

It was noted that the average catch per haul is high for this data set (>1000 kg per haul) in comparison with later steam trawler catch rates (approximately 300 kg per haul). This may be due to incorrect conversion of catch weight from the original records. The original records are reported to no longer exist, so checking is probably impossible. A common feature of many developing fisheries is high catch rates initially, so the data may also be correct.

**(e) Total Catch by Year and Vessel**

**Table 5: Total Retained Catch and Number of Hauls by Year**

<b>Year</b>	<b>Total Catch (kg)</b>	<b>Hauls</b>
1918	2,633,491	1,759
1919	4,646,646	2,324
1920	2,925,533	1,110
1921	6,080,484	2,769
1922	8,507,776	3,587
1923	1,225,367	7,492

Total catch and number of hauls by vessel for the 1918-1923 data are presented in Table 6.

**Table 6: Catch and Number of Hauls by Vessel**

<b>Vessel</b>	<b>Retained wt (kg)</b>	<b>Discard wt (kg)</b>	<b>Hauls</b>
Brolga	2,520,637	470,800	2,660
Dibbiu	1,246,122	272,459	1,554
Dureenbee	584,111	58,878	688
Goonambee	1,392,307	329,855	1,574
Goorangai	1,190,492	380,481	1,437
Gunundaal	1,100,573	65,214	1,911
Koraaga	1,905,516	309,609	2,217

**(f) Catch by Depth**

Total catches by depth interval (0=0-20) are presented in Table 7. Depths have been converted from fathoms to metres. A small number of hauls (17) had a recorded depth of greater than 600m. It was assumed in this case that the depth was recorded in feet instead of fathoms, and the recorded depth was converted accordingly. The absence of catches in depths between 200 and 600m supported this assumption.

**Table 7: Total retained and discarded catch weight by depth interval**

Depth	Retained wt (kg)	Discard wt (kg)	Hauls
0	4,659	1,444	9
20	3,852	1,179	6
40	802,340	157,597	906
60	3,505,460	666,309	3,309
80	1,697,237	253,383	2,308
100	2,686,399	485,909	3,847
120	1,146,112	295,946	1,549
140	39,223	7,033	59
160	4,854	1,360	6
180	6,168	1,361	9
200	816	16	1

**(g) Catch by Year and Species**

**Table 8: Total Retained Catch by Species by Year**

Code	Species	1918	1919	1920	1921	1922	1923
	unknown	4,264	14,605	2,603	10,261	32,201	3,764
BA	barracouta	28,188	93,656	10,383	44,722	38,735	476
DO	dory	159	816	0	0	0	0
FL	tiger flathead	578,315	992,030	485,606	1,483,128	2,113,319	311,286
GU	latchet	192,494	337,118	192,128	228,569	215,015	21,624
JD	john dory	20,381	11,827	8,334	7,119	225	0
LJ	chinaman leatherjacket	103,416	282,033	375,329	472,844	682,457	104,413
MI	mixed	4,642	2,954	23,582	45,691	51,056	1,264
MO	jackass morwong	14,431	0	992	3,493	456	0
NA	redfish	1,084	2,409	3,800	2,481	1,800	0
PE	ocean perch	893	0	0	0	0	0
SA	unknown	5,406	5,831	2,046	0	0	0
SK	rays	58,652	118,863	28,970	27,918	17,581	157
SN	snapper	1,465	1,595	4,416	204	1,339	0
TH	thetis fish	0	0	0	445	0	0



### 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.