...OF FISHERIES AND FAUNA
...ERN AUSTRALIA
...SERVICE BULLETIN

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STAFF NOTES

Research Officer R.J. Slack-Smith returned from Shark Bay on March 18, after having completed a prawn staining and punch marking programme. Two thousand prawns, both kings and tigers, were marked as part of the prawn studies. It is anticipated that many of the marked prawns will be recovered by commercial trawlers during the coming season. A payment of 2/- will be made for each marked prawn handed to departmental officers at either Carnarvon or Denham.

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Senior Research Officer B.K. Bowen and Tehnical Officer N.E. McLaughlan left Perth for the Abrolhos Island on March 29 in connection with the current crayfish research programme.

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Research Officer R.C.J. Lenanton left Perth for Carnarvon on March 30 in connection with the prawn research programme and to receive any marked prawns that are recovered by commercial fishermen. After a short return to Perth, Mr. Lenanton will go to Denham on May 3 to commence research into the whiting fishery in Shark Bay. The decision to institute whiting research in Shark Bay was made at the recent meeting of the Western Fisheries Research Committee. Mr. Slack-Smith will accompany Mr. Lenanton to Denham where he will inspect the progress made in the prawn research programme. It is hoped that a caravan which is at present nearing completion will be available in time to be towed to Shark Bay where it will be used to accommodate research personnel. A late report from Mr. Slack-Smith advises that a stained king prawn has been returned, having been caught by a commercial trawler on April 27. The prawn was caught in the Cape Peron area ten miles from where it was marked on March 26. A further report, as yet unsubstantiated, advises that another female king prawn has been recovered near Kok's Island, fifty miles from where it was marked, having covered the distance in 2-3 weeks.

The Administrative Officer, Mr. B.R. Saville, commenced three months' long service leave plus annual leave on April 21. Fauna Officer H.B. Shugg is acting Administrative Officer. Mr. G. Dixon is acting Fauna Officer and Mr. J.B. Byleveld on his return from a week's leave on May 10, will be acting in Mr. Dixon's position. Inspector A.V. Green of Mandurah, commenced annual leave on April 5. He is being relieved by Relieving Inspector R.M. Crawford. Inspector E.I. Forster (p.v. "Vlaming") commenced long service leave on May 1. Those who will go on leave during May are Inspector T.B. Baines (Mobile Patrol) on May 10 and Inspector R.G. Emery (Relieving Inspector), on May 24. Inspector Crawford will relieve Inspector Baines on the mobile patrol.

* * *

Three resignations were received during March and April. Assistant Inspector P.C. Willey resigned from the public service on March 26, temporary Technical Assistant M. Stutchbury resigned on April 23 and General Assistant R. Bray, who was attached to the r.v. "Peron", severed his connection with the Department on April 30.

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Under the command of Inspector E.I. Forster, with Assistant Inspector E.J. Little and Cadet Inspector W.M. Mahoney as crew, the p.v. "Vlaming" sailed from Fremantle to Shark Bay during April. Vlaming will henceforth be located at Shark Bay. She will replace p.v. "Garbo", which is to be put up for sale. Assistant Inspector Little will remain at Shark Bay as assistant to Inspector Campbell.

A new vessel now in course of construction will take over the Vlaming's previous duties along the coast. She is expected to be completed about the end of June.

* * *

The r.v. "Peron" returned to Fremantle on March 21 from Shark Bay following completion of a sediment and hydrology sampling project and a prawn staining and punch marking programme.

ASSISTANT MINISTER APPOINTED

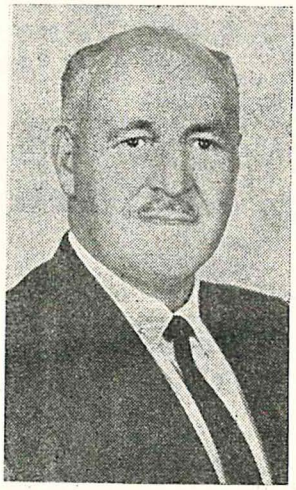
The Hon. ROSS HUTCHINSON, D.F.C., M.L.A.

The Government's decision to appoint two additional Cabinet Ministers, and the resignation of the Hon. G.P. Wild, M.L.A., on his appointment as Agent-General, have brought about changes in the ministerial direction of the Department. Mr. Ross Hutchinson has been promoted to the position of Minister for Works and Water Supplies vacated by Mr. Wild, but pending parliamentary sanction to the two new appointments, he still holds the portfolios of Health and Fisheries and Fauna.

Mr. Graham Charles MacKinnon, M.L.A., has been appointed honorary Assistant Minister for Health and Fisheries and Fauna, and it is understood that he will take over in his own right as soon as the requisite legislation is passed and Mr. Hutchinson relinquishes both posts.

Mr. MacKinnon was born at Bridgetown on December 19, 1916. In 1940 he enlisted in the A.I.F., later transferring to the famed 2/4 Machine Gun Battalion. Having graduated from an officers' school he was promoted lieutenant in his battalion, served in Singapore and became a prisoner-of-war for more than three years.

Discharged medically unfit on his return to Australia, Mr. MacKinnon later went to Bunbury, where he managed a business until his election to the Legislative Council in 1956.



The Hon. G. C. MacKINNON ,M.L.C

The new Assistant Minister has wide and varied interests. He is currently District Commissioner for the Forrest District of the Boy Scouts Association. He is a former President of the Bunbury Sub-Branch of the R.S.L. and was a member of the Rotary Club of Bunbury (he is now an honorary member). With his wife he shares an interest in the Bunbury Repertory Club (of which both are active members) and the Bunbury Youth Club. He is also a member of both the South-West and Commercial Clubs at Bunbury.

Shortly after his appointment Mr. MacKinnon visited Head Office, when Mr. Saville, in the absence of the Director, introduced to him all members of the staff who were present.

METROPOLITAN NEWS

Senior Inspector J.E. Munro reports that, as in recent years, crabs are again very scarce in the Swan and Canning rivers. On the other hand ample supplies of cooked crabs, which are returning fishermen around 3/- per lb. on the Perth market, are coming from Bunbury and Mandurah.

ANGLING FOR MULLET

Inspector E.R. Hammond (Bunbury) reports that during the afternoon of February 28, he saw anglers on the Vasse River Bridge at Busselton catching mullet on lines. The people were using tomato and watermelon for bait and were able to catch as many mullet as they cared. He added that it was the first time he has ever seen mullet caught in this manner.

ALLOWANCES INCREASE

Following a review of hotel tariffs and agreement with the Civil Service Association, the Public Service Commissioner has advised that the daily rates of reimbursement for travelling, transfer and relieving expenses have been increased from 58/6 to 59/6 per day as from January 1, 1965. For those enjoying a salary margin exceeding £1,109 per annum, the rate has been increased from 62/6 to 63/6 per day.

APPORTIONMENT OF LONG SERVICE LEAVE COST

The Under Treasurer has determined that in the event of an employee being transferred from a Department operating within the Consolidation Revenue Fund to a Public Utility or a concern operating outside the Fund or vice versa, the cost to the Department, Public Utility or Concern for long service leave entitlement accrued by the employee, prior to transfer, will be assessed at the employee's classified or award rate of salary at the date of transfer.

INCREASE IN SALARY MARGINS

Following negotiations with the Civil Service Association of W.A., the Public Service Commissioner has advised that agreement has been reached on new rates of pay for certain

officers within the limit of the justiciable salary range. The new rates apply retrospectively from January 8, 1965, and are payable to all Clerical and General Division officers. Typical increase to be enjoyed by our staff are set out on the following table:-

Category	Age or Year of Service	Margin Over the Basic Rate		
		Old Margin	New Margin	Increase
Cadet or Assistant Inspector	19 years	59	76	17
"	20 "	157	176	19
"	21 " or 1st year service	225	245	20
"	22 " or 2nd year service	265	286	21
"	23 " or 3rd year service	305	327	22
"	24 " or 4th year service	355	378	23
Inspectors Class G-II-1	Minimum	565	596	31
	Maximum	622	654	32
Inspectors Class G-II-2	Minimum	679	712	33
	Maximum	736	770	34
Senior Inspectors etc. Class G-II-3	Minimum	798	833	35
	Maximum	860	896	36
Class G-II-4	Minimum	922	959	37
	Maximum	984	1022	38
Class G-II-5	Minimum	1047	1087	40
	Maximum	1110	1152	42
Class G-II-6	Minimum	1173	1217	44
	Maximum	1236	1282	46

CANCELLATION OF LICENSES

Following the examination of evidence by the Minister for Fisheries and Fauna, Mr. Hutchinson, and the Honorary Minister, Mr. MacKinnon, of breaches of the crayfish conservation laws by some fishermen, it has been decided that in the best interests of the crayfish industry more drastic measures are necessary against those fishermen who continually breach the regulations. Consequently two licenses have been cancelled and another fishermen has had his license endorsed to the effect that his crayfishing activities be confined to the Abrolhos Islands area.

A Fremantle fishermen Giuseppe de Ceglie, has had his professional fishermen's license cancelled following his fourth conviction for offences relating to undersize crayfish. Another fishermen, who was operating from Dongara, openly boasted that he was using more pots than he was licensed to operate - and this was confirmed by departmental officers and other fishermen - has had his current professional fishermen's boat and crayfish pot licenses cancelled. He is now not legally able to fish commercially anywhere in the State. The license of this fisherman was suspended some years ago, but evidently he had not learnt a lesson.

The other fishermen was detected crayfishing within the Abrolhos Island area although his license was not so endorsed permitting him to do so. He has now been restricted to fish within the Abrolhos Island area during the current season.

ABROLHOS ISLANDS AND TOURISM

The part to be played by the Abrolhos Islands in the State's future tourist development programme will be considered following an inspection of the islands by a special committee which has been set up to study the associated problems of tourism as against the needs of the fishing industry and fauna conservation.

The party which visited the islands between April 26 and 29, on board p.v. "Dampier" and r.v. "Lancelin", comprised the Public Service Commissioner, Mr. R.H. Doig, Chairman of the Tourist Development Authority; Mr. R.H. Miller, Director, Tourist Development Authority; Mr. A.E. Heagney, Assistant Under Secretary for Lands; Mr. W. Burton of Geraldton, representing the Abrolhos Islands Trustees; Senior Research Officer B.K. Bowen and Fauna Officer H.B. Shugg, Department of Fisheries

and Fauna and Mr. L.M. Kelly, Lands Department, who was secretary to the committee.

The vessels left Geraldton on April 26 and anchored for the first night at the Wallabi group. Next morning "Dampier" conveyed the committee to inspect North Island, and in the afternoon a visit was paid to West Wallabi Island. On Wednesday the Easter Group was visited and inspections were made on Rat and Wooded Islands. After the visit to the Easter Group the vessels proceeded south and arrived at the Southern end of Pelsart Island and anchored there for the night. Early Thursday morning the committee landed and inspected the lower end of Pelsart Island. About mid-day the whole party boarded "Dampier" for the return journey to Geraldton arriving there late in the afternoon. "Lancelin" headed straight for Fremantle, arriving there next day.

Following their return to Geraldton, the committee met the Abrolhos Island Trustees and discussed with them the future development of the Islands.

Prior to the party returning to Perth on April 30, the Public Service Commissioner and Mr. Miller took the opportunity to visit the various Government Departments in Geraldton.

INVESTMENT IN AUSTRALIAN FISHING INDUSTRY

The Commonwealth Government's general policy to encourage overseas investment in Australia looks almost certain to benefit the Australian fishing industry. Both British and American interests are reported as planning to invest in the Australian fishing industry. A team of British experts, headed by Mr. Eric Waller, a director of the Ross Group of Grimsby, recently arrived in Sydney to undertake a 10-day fact finding inspection. Following the British visit, representatives of six or seven American fishing firms will also come to Sydney to make individual appraisals of the industry with a view to capital investment.

PEARLSHELL PRODUCTION

Pearlshell production for export in Western Australia continues to decline significantly. The production for 1964 is 43% less than that for 1963 and has falled from 567 tons in 1960 to 138 tons in 1964. Likewise the number of men

employed in the industry has fallen from 341 in 1960 to 103 in 1964.

The production figures over the last five years and the number of men and boats engaged in the industry are as follows.

PEARLING STATISTICS

NATIONALITIES ENGAGED

Asiatics:	1960	1961	1962	1963	1964
Chinese	55	13	6	6	4
Japanese	134	74	68	45	30
Malays	64	56	48	42	38
Koepangers	9	6	4	2	1
Okinawans	-	2	-	-	-
Ryukuans	2	-	-	-	-
Indonesians	-	-	-	-	1
Sub Total	264	151	126	95	74
Others:					
Whites	13	9	10	6	10
Half Castes	11	9	10	2	3
Aborigines	53	18	25	17	16
TOTAL	341	187	171	120	103

AVERAGE TAKE

	1960	1961	1962	1963	1964
Average take per boat (tons)	18.20	21.05	21.81	18.61	13.8
Average take per man (tons)	1.66	1.91	2.04	2.01	1.30

PRODUCTION VALUE

Year	PEARL SHELL			MEN		BOATS
	Production		Value £	No.	Increase or Decrease %	No.
	Tons	Increase or Decrease %				
1960	567	+ 11.6	269,786	341	- 3.1	31
1961	358	- 36.8	155,680	187	- 45.1	17
1962	349	- 2.5	156,074	171	- 8.4	16
1963	242	- 30.6	111,850	120	- 29.8	13
1964	138	- 43.0	91,040	103	- 14.1	10

EXMOUTH GULF PRAWN LICENSES LIMITED

The Minister for Fisheries and Fauna (Mr. Ross Hutchinson) has directed that the number of vessels to be licensed to trawl for prawns in Exmouth Gulf during the next two years be limited to 15. Nine licenses are to be allotted to vessels owned or nominated by M.G. Kailis (1962) Pty. Ltd., while the remaining six licenses will be allocated by ballot to independent operators, including freezer boats.

The limitation may only be exceeded in the light of special circumstances which may be brought forward.

These restrictions have been implemented in the light of the known potential of the fishery and will remain current until such time as departmental investigations show that more vessels can be safely admitted to the fishery, or, alternatively, that the number must be reduced. The restrictions imposed on vessels authorized to trawl for prawns in the Shark Bay-Carnarvon area still apply.

ABROLHOS SEASON OPENING

In his report on the opening of the 1965 Abrolhos crayfishing season, Inspector R.G. Emery advises that together with Inspectors A.T. Pearce, J.T. Kelly, D.E. Blackman and G.C.

Clifford he departed from Geraldton on the p.v. "Dampier" on March 8, to assist with the policing of the opening of the Abrolhos season and to supervise the soaking of craypots in the areas set aside for this purpose in the various island groups prior to the opening day. It had been arranged to station Inspector Emery on Basile Island in the Southern Group; Inspector Pearce on Pidgeon Island and Inspector Blackman on West Wallabi, both in the Wallabi Group, and Inspector Clifford at North Island.

Before going to the islands, a patrol was made of the Turtle Dove Shoal area; however, no illegal activities were observed and the p.v. "Dampier" proceeded northward to the Pelsart Group of the Abrolhos. On being put ashore Inspector Emery found Basile Island completely deserted. However, he was able to obtain temporary accommodation on Burnett's Island in a hut offered to him by fishermen. Next day the weather deteriorated and the islands were battered by gale-force winds for two days. Late in the afternoon of March 12, the fishing boat "New Mexico" arrived at Burnett's and Inspector Emery was offered every assistance to inspect the fishing grounds. He was informed that small boats from the Western Reef area, Stick Island and various smaller islands soaked their craypots adjacent to Gun Island. In the past some fishermen availed themselves of the opportunity to soak their pots in this area, to enable them to set their pots with a minimum of delay immediately after the opening, as the smaller boats were capable of carrying only 10 to 12 pots at a time and the fishermen had found that they were handicapped by having to make several trips to set their pots.

To assist the fishermen, Inspector Emery agreed that provided all pots were placed in separate, easily identifiable heaps and as close to the shore as possible, and in the Gun Island area, the fishermen could soak their pots there. Inspector Emery visited other areas of the Southern Group, including The Nook and Whale Bay, but no breaches of the regulations were observed.

By March 14 most of the fishermen had arrived from Geraldton and began setting their pots on the grounds for the first pulls on March 15. On March 15 p.v. "Dampier" returned to the Southern Group to take off Inspector Emery, prior to returning to Geraldton. All the inspectors engaged in the policing of the opening at the Abrolhos attended a conference on their return to Geraldton to discuss the project and submit their reports to Inspector B.A. Carmichael. Inspector Emery added that due mainly to the efforts of Inspector Carmichael, and his excellent organisation, the whole operation was a marked success.

CONVICTIO

JANUARY - MARCH, 1965

Date	Defendant	Court	Charge	Result
		FISHERIES ACT		Fined
25.1.65	DRUSKOVICH, Nikola	Fremantle	U/S Crayfish	11. 7.6.
25.1.65	DRUSKOVICH, Nikola	"	"	13.10.0.
25.1.65	MERLINO, Guiseppe	"	Illegal Netting	10. 0.0.
25.1.65	BEFUMO, Philip	"		
25.1.65	MASTRALE, Francesco	"		
25.1.65	DORICO, Guiseppe	"		
25.1.65	VINCI, Robert	"	U/S Crayfish	46.7. 6.
15.2.65	PAPARELLA, Luigi	"	"	28.10.0.
15.2.65	PAPARELLA, Luigi	"	"	29.15.0.
15.2.65	TURTER, Leonardo	"	"	21. 7.6.
17.2.65	PAPPAGALLO, Lorenzo	"	"	43.15.0.
8.3.65	RADICH, Luka	"	"	31.15.0.
8.3.65	PARKER, Raymond A.	"	"	62.10.0.
8.3.65	PAPARELLA, Cosimo	"	"	70.10.0.
8.3.65	PALMIOTTA, Corrado	"	"	33. 5.0.
8.3.65	KATNICH, Frederick R.	"	"	86. 0.0.
8.3.65	IVANKOVICH, Tugomir	"	"	28. 5.0.
8.3.65	BALICE, Leo	"	U/W Craytails	14.10.0.
8.3.65	ABELHA, Alfredo F.	"	U/S Crayfish	37.10.0.
8.3.65	AMATO, Angelo	"	"	38.15.0.
8.3.65	SPINNELLA, Emmanuel	"	U/W Craytails	12. 0.0.
8.3.65	AYRE, David, S.	"	"	20.10.0.
15.3.65	CARTER, Colin	"	U/S Crayfish	20. 5.0.
15.3.65	FRANCESCELLO, Calegero	"	U/W Craytails	86.15.0.
15.3.65	LOCKWOOD, Ronald, E.	"	U/S Crayfish	13. 0.0.
15.3.65	MINERVINI, Guiseppe	"	U/W Craytails	15. 5.0.
15.3.65	PAPARELLA, Luigi	"	U/S Crayfish	38. 0.0.

CONVICTIONS CONT'D

Date	Defendant	Court	Charge	Result
22.3.65	AVENS, Auserlis	Fremantle	U/S Crayfish	33.15.0.
22.3.65	CASTALDI, Guiseppe	"	"	39. 0.0.
22.3.65	PERCICH, Ivan	"	"	30. 5.0.
22.3.65	PISSANI, Ignazio	"	Unlicensed processing and obstruction	44. 0.0.
22.3.65	TRIPI, Salvatore	"	U/W Craytails	34. 5.0.
2.2.65	SAGGERS, Sampson G.	Perth	U/S Crayfish	10.10.0.
2.2.65	SAGGERS, Sampson G.	"	Fishing Closed Waters	5. 0.0.
2.2.65	ROBINS, Kerry, A.	"	U/S Crayfish	12.15.0.
2.2.65	ROBINS, Kerry, A.	"	Fishing Closed Waters	5. 0.0.
11.2.65	GRAHAM, Andrew	"	U/S Crayfish	26. 2.0.
19.2.65	GENOVESE, Salvatore	"	U/W Craytails	65.10.0.
19.2.65	LENZO, Guiseppe	"	U/S Crayfish	11. 0.0.
19.2.65	CAPURSO, Giacomi	"	"	26. 7.6.
5.3.65	BUBB, Raymond	"	"	12. 0.0.
5.3.65	POZZI, Alfred A.	"	"	35. 0.0.
5.3.65	MAXWELL, Artor	"	"	14.15.0.
5.3.65	SNADEN, John F.	"	"	41.15.0.
5.3.65	STARR, George	"	"	18. 5.0.
5.3.65	BOLITHO, Charles	"	"	19.10.0.
5.3.65	BOLITHO, Keith	"	"	14.10.0.
5.3.65	BROWN, Kenneth J.	"	"	11.10.0.
5.3.65	FRY, Edward W.	"	"	13. 0.0.
5.3.65	TAILOR, James	"	U/W Craytails	33.15.0.
5.3.65	CAMPOLO, Filippo	"	"	15. 0.0.
12.3.65	BARRASS, William T.	"	Obstruction	10. 0.0.
12.3.65	MAY, Arthur A.	"	U/S Crayfish	59.18.0.
12.3.65	BUTLER, James H.	"	Obstruction	20. 0.0.
12.3.65	CHAPMAN, Peter E.	"	"	15. 0.0.
23.3.65	WRIGHT, H.G.W.	"	U/S Crayfish	98.15.0.
23.3.65	MURAN, Wasyl	"	"	38. 0.0.
23.3.65	COOPER, Joseph	"	"	26. 5.0.

CONVICTIONS CONT'D

Date	Defendant	Court	Charge	Result
23.3.65	BLAKEY, Jack H.	Perth	U/S Crayfish	10.15.0.
26.3.65	HENLEY, Peter	"	"	64. 8.0.
26.3.65	BRADSHAW, Brian J.	"	"	15. 0.0.
8.3.65	FARROW, Henry C.	Bunbury	"	10. 7.0.
25.2.65	BOCKISCH, Lutz	Rockingham	"	13.12.6.
26.1.65	FIOCCO, Antonio G.	Geraldton	"	30. 2.0.
26.1.65	GARTON, Percival	"	Fishing Closed Waters and Obstruction	44.13.0.
26.1.65	ALLCHIN, John	"	U/S Crayfish	12. 9.0.
26.1.65	CHRISTIE, E.W.J.	"	"	26.14.0.
26.1.65	LANDSELL, Joseph J.	"	"	15. 3.0.
26.1.65	YDER, Kristian Kobra	"	"	11. 4.0.
26.1.65	TRAVIA, Frank	"	"	11. 3.0.
26.1.65	GLAZIER, Maurice H.	"	"	10.10.0.
26.1.65	NICKOLAKIS, Con K.	"	"	11. 9.0.
26.1.65	CORREIA, Manuel	"	"	11.18.0.
26.1.65	VINCI, Peter	"	"	12. 9.0.
26.1.65	MINNISALE, Santo	"	"	11. 8.0.
26.1.65	VINCI, Antonio	"	"	10.19.0.
26.1.65	MALONE, Hilary	"	U/W Craytails	46.10.0.
25.2.65	WOINER, Bernard	"	U/S Crayfish	26. 6.0.
25.2.65	JONES, Francis A.	"	"	13. 5.0.
25.2.65	GREGO, James A.	"	"	11. 0.0.
25.2.65	HERBERT, John D.	"	"	29. 7.0.
28.1.65	MATHEWS, Arthur E.	Pinjarra	Fishing Closed Waters	5. 0.0.
25.3.65	MARRIOTT, Mervyn W.	"	"	5. 0.0.
25.3.65	GREENHOUGH, James S.	"	"	5. 0.0.
25.3.65	RANKIN, Henry J.	"	Unlicensed Fishing	5. 0.0.
25.3.65	TREW, Albert M.	"		
	FAUNA PROTECTION ACT			
2.12.64	CARTER, Gordon	Midland Junction	Taking Protected Fauna	10. 0.0.
2.12.64	HUNTER, Robert W.	"	"	5. 0.0.
12.3.65	SWIFT, Jack B.	Perth	Failure to Submit Return	5. 0.0.
25.3.65	BOWDEN, Edward W.	Pinjarra	Taking Protected Fauna	1. 0.0.
25.3.65	BURTON, Mervyn E.	"		

STRANDINGS OF MARINE MAMMALS

(Whales, Porpoises, Dolphins,
Seals, Dugongs, "Sea Monsters")

In its work on the distribution and relationships of the marine mammals of Western Australian waters, the W.A. Museum is very keen to hear of any finds of stranded material, particularly cetaceans (Whales, Porpoises, Dolphins).

Any information on strandings should be relayed immediately to Dr. R.W. George or Mr. Athol Douglas, W.A. Museum, Perth, Telephone 28.4411 (or, if after hours, to Mr. Douglas, 29.1175), who will arrange for someone to examine the material at the site. Finders are asked not to remove or disturb any material except to prevent its disappearing (into either the sea or craypots!) If there is any danger of the carcass washing away, the head (at least) should be carried above the high-tide mark and a note made of the total length of the animal.

Recent reports by inspectors of strandings, such as that of 35 false killer whales at Doubtful Island Bay, a small sperm whale at Torbay and a dolphin at Shark Bay are adding considerably to our knowledge of these interesting animals. Several species are known only from a few remains found on isolated beaches in various parts of the world and further information and material is badly needed.

EFFECT OF UNDERWATER DETONATIONS ON FISH

An enquiry from a representative of the Alaska fishermen's union to the International Oceanographic Foundation, Miami, Florida, publishers of the monthly journal Sea Secrets, concerns the effects on fishes of underwater explosions being detonated by oil companies in their search for oil beneath the sea floor.

The reply to the enquiry appears in the January, 1965, edition of Sea Secrets, and is as follows:-

"The question of whether underwater explosions have harmful effects upon fishes and other marine life has concerned fishermen and conservation officials in many areas. Fortunately these effects are less severe than might be expected, and with certain precautions they can be minimized.

The purpose of detonating explosives in the sea in the course of oil exploration is to provide a source of energy which travels through the rock strata in the sea bottom and is reflected to recording geophones. The character of the echoes so reflected can be interpreted by geologists, and can reveal the presence of oil deposits. The value of the oil so discovered is great enough that such activity is encouraged by coastal states.

High explosives detonated underwater can kill fish up to a moderate distance from the explosion. Fishes with air bladders (which include salmon, herring, lingcod and many other species) are affected more than those without air bladders.

The size of explosive charge used varies from 5 pounds to 800 pounds or more, but is rarely more than 50 pounds. In Louisiana, very large charges (200 to 800 pounds of 60% gelatine dynamite) killed fish within 200 feet of the explosion, but not beyond that point; they did not kill shrimp or oysters.

Despite the undoubted danger to fishes close to explosions, it appears that there is a surprisingly high survival rate in the general vicinity. Oysters, shrimp and lobster seem to be relatively unaffected; and not all fishes are killed, even when within the lethal range for others.

The most dramatic evidence of the relatively low mortality from underwater explosions came from the mammoth blast that took place when Ripple Rock, a hazard to navigation, was dynamited in British Columbia. A 2,500-foot tunnel was drilled from a nearby island under the narrows, and the prodigious charge of 2,750,000 pounds of explosives was placed under the rock. This was detonated on April 6, 1958, and the top 40 feet of the reef was knocked off. In order to test the effects of this explosion on fish in the area, biologists placed lingcod and other fish in commercial crab traps at distances varying from one-half mile to $4\frac{1}{2}$ miles from the blast, and lemon soles and other species in floating live ponds from one-half to two miles away. None of the fishes in the traps or ponds, even those as close as a half-mile, was killed by the blast. About 100 rock-fish were picked up close to the explosions, but they were the only fish known to have been killed. Furthermore, five killer whales, a school of porpoises, two sea lions and a fur seal observed swimming within three miles of the rock before the explosion, were also seen in the vicinity afterwards, apparently unharmed.

Thus it appears that although underwater explosions do kill fish, their effect is restricted to areas in the immediate vicinity of the blast. To avoid even this mortality, California biologists have suggested the substitution of black powder for dynamite in seismic work. Experiments carried out in 1951 and 1953 showed that while dynamite killed caged fish placed nearby in every instance, even when the charges were as small as 1¼ pounds, blasts produced by black powder killed very few fish, even when the charge was as large as 45 pounds and cages were as close as 10 feet. In some tests, the cages were demolished, but the fish were not killed. The difference in effects of dynamite and black powder are apparently related to the characteristics of the energy discharge, the black powder burning more slowly and thus having a lower peak intensity.

BANDICOOTS TROUBLESOME AT KELMSCOTT

We are all familiar with the damage that kangaroos and emus cause to fences and crops and we know that possums are unwelcome in houses. Complaints of damage caused by other marsupials, however, are rare and not since much earlier days has anyone bemoaned to us the activities of bandicoots. Nevertheless, at least one property in recent times has suffered unwelcome visitations from these small but attractive animals whose habit of digging in gardens for insect larvae so worried early settlers.

The property concerned is the nursery of R. Traill-Nash & Son of Albany Highway, Kelmscott, about 14 miles from Perth. The bandicoot involved was, naturally enough, the Quenda or Southern Short-nosed Bandicoot (Isoodon obesulus). This animal was once very plentiful in the early days of settlement but declined, as civilization encroached into its habitat, until it became something of a rarity in developed areas. In recent years, in common with a number of other small marsupials, it seems to have increased in numbers wherever the native environment remains, and is commonly reported in the outskirts of the metropolitan area.

The damage suffered in this instance has been limited to young rose bushes and citrus trees, the roots of which are uncovered by the bandicoots in their search for grubs. About 50 rose bushes and young citrons were lost before trapping began in November 1963. The damage was caused by the same characteristic "pits" as wrought havoc in the potato patches and other gardens of the early settlers.

Anthopomorphists might suggest that the bandicoot means well, but it would be more realistic to acknowledge that the benefits of his propensity to attack destructive larvae may sometimes be outweighed by the damage he causes in seeking them out. His behaviour puts one in mind of modern man and his sometimes irresponsible use of pesticides as well as his tendency to destroy natural assets in providing improved transport and other facilities.

The nurseryman in this instance reacted with commendable forbearance. Instead of attempting to solve the problem in the usual way by destroying the fauna causing the damage, he sought and received assistance from the Western Australian Museum and this Department. Spring traps were supplied and the bandicoots were lured into them by a bait mixture devised by Mr. W.H. Butler, of the Museum. The bait consisted of crisp apples, richly bedaubed with an apparently irresistable spread of oatmeal, peanut oil, raisins and lard. Once trapped, most of the bandicoots were transported several miles away to Churchman's Brook, where the environment seemed satisfactory and where no nurseries or other gardens were in the immediate vicinity. Some, however, have been handed over to the University of W.A. for study. Mr. Traill-Nash tells us that the first female captured had 5 young fastened to the teats in her pouch. The young were then about the size of fully-grown mice but were hairless at that stage and their eyes had not opened.

About a dozen bandicoots were trapped in the first six months, after which the number was reduced. During the 1964/65 summer, however, the damge recommenced as the quendas were again attracted to the nursery, apparently by the larvae to be found in recently disturbed and watered soil. Mr. Traill-Nash will recommence trapping and removing the attractive but troublesome few that still shelter in the adjoining bush.

CONVERSION TO DECIMAL CURRENCY

Although the "C" day for the change over to decimal currency is not until Monday, February 14, 1966, it is proposed that the staff, particularly the field staff, who, as part of their duties issue licenses and perform banking duties, familiarize themselves with decimal currency and change-over procedures so as to provide a smooth transition in the Department as well as contribute towards a similar situation within the Public Service generally.

Officers whose duties include banking and the issuing of licenses should consider the whole question now, so that should any doubt come to mind or should any difficulties be revealed the associated problems can be considered and rectified before "C" day.

The information which is being published hereunder for both personal and departmental benefit has been gleaned from circulars issued by the Decimal Currency Board and our own State Decimal Currency Planning and Co-ordinating Committee.

Fortunately our Department is one that will be least effected by the change-over, due mainly to the fact that we are a non-accounting Department and that most license fees, etc., have an exact equivalent in decimal currency. Those that do not have an exact equivalent and which will require remedial legislation are as follows - Pearling Act 1912-1949; Pearl Divers License 6/8 (66.2/3 cents) and Pearl Tenders's License 6/8 (66.2/3 cents): Fauna Protection Act Regulations, royalty on possum skins 9d. per skin (7.5 cents).

The Decimal Currency Board has released three Conversion Tables showing values in pounds, shillings and pence in terms of the new decimal currency. Two of these tables appear hereunder and they are respective elaborations of Section 8 and 10 of the Federal Currency Act. The third is a comprehensive conversion table which converts amounts of £.s.d. ending in half pence to the nearest whole cent and is primarily for assistance to commercial organisations.

Section 8 of the Federal Currency Act provides that the decimal currency equivalent of £1 is 2 Dollars, of 1/- it is 10 cents and of 1d. it is 5/6 of a cent. The Exact Equivalents Table shows these relationships in more detail - firstly in vulgar fractions and secondly to 5 decimal places of a cent. Each table sets out at the foot thereof the occasions for which it should be used. Section 10 of the Act provides the conversion necessary for the purpose of paying amounts of £.s.d. The Banking and Accounting Table shows these conversions but this table should be used only for converting final balances of accounts or amounts due for payment by debtors - it is not suitable for converting unit rates or prices.

CONVERSION OF AMOUNTS OF £.S.D. TO DOLLARS AND CENTS

EXACT EQUIVALENTS TABLE

Pence	Cents	Shillings	Cents	£. s. d.	$
1	$\frac{5}{6}$ or .83333*	1	10	10. 0	1.00
2	$1\frac{2}{3}$ 1.66667	2	20	11. 0	1.10
3	$2\frac{1}{2}$ 2.5	3	30	12. 0	1.20
4	$3\frac{1}{3}$ 3.33333	4	40	13. 0	1.30
5	$4\frac{1}{6}$ 4.16667	5	50	14. 0	1.40
6	5 5	6	60	15. 0	1.50
77	$5\frac{5}{6}$ 5.83333	7	70	16. 0	1.60
8	$6\frac{2}{3}$ 6.66667	8	80	17. 0	1.70
9	$7\frac{1}{2}$ 7.5	9	90	18. 0	1.80
10	$8\frac{1}{3}$ 8.33333	10	100	19. 0	1.90
11	$9\frac{1}{6}$ 9.16667			1. 0. 0	2.00
12	10 10				

* Taken to nearest 5th decimal place

The Exact Equivalents Table shows the relationships between pounds, shilling and pence and dollars and cents as prescribed in section 8 of the Currency AAct 1963, namely:-

1 pound = 2 dollars
1 shilling = 10 cents
1 penny = 5/6ths of a cent

This table should be used where it is necessary to obtain exact equivalents in decimal currency of amounts expressed in £.s.d. For example, where rates or unit prices are expressed in £.s.d. in agreements between contracting parties, this table may be used to convert them to their exact equivalents in decimal currency.

BANKING AND ACCOUNTING TABLE

Pence	Cents	Shillings	Cents	£. s. d.	$
1	1	1	10	10. 0	1.00
2	2	2	20	11. 0	1.10
3	2	3	30	12. 0	1.20
4	3	4	40	13. 0	1.30
5	4	5	50	14. 0	1.40
6	5	6	60	15. 0	1.50
7	6	7	70	16. 0	1.60
8	7	8	80	17. 0	1.70
9	8	9	90	18. 0	1.80
10	8	10	100	19. 0	1.90
11	9			1. 0. 0	2.00
12	10				

The Banking and Accounting Table converts £.s.d. amounts expressed in whole pence to decimal currency amounts expressed in whole cents. (It is consistent with section 10 of the Currency Act, 1963).

To convert an amount of £.s.d. to dollars and cents:-

* Multiply the pounds by two - to give dollars

* Add the equivalent of the shilling and pence

e.g. £23.17s.10d.

£23 (x 2)	=	$46.00
17s.10d.	=	1.78 (from table)
£23.17s.10d.	=	$47.78

Expression of Monetary Amounts

It will not be practicable to prescribe exact symbols for dollars and cents, or precise methods of expressing dollars and cents in words or figures. Considerable latitude will be allowed to the public in this field just as at present, in both dollar and sterling countries, there are several acceptable methods by which amounts of money may be expressed. To take an example, amounts in the existing currency are readily understood if they are written, typed or printed in any of the following forms:-

£2.13.6., £2-13-6., £2/13/6., or £2.13s.6d.

Nevertheless, when introducing a new decimal currency system, an opportunity is afforded at the outset for giving official guidance on what might be regarded as the "best" method of expressing amounts in dollars and cents. In this way it should be possible to achieve the greatest possible degree of uniformity in the future, by the use of methods which combine certainty with simplicity. The method which the Decimal Currency Board recommends is suitable for teaching in schools, for hand-writing and (with certain modifications) for typing, printing etc. In practice many acceptable alternatives will no doubt be used.

The main requirements are that the methods of notation should be unambiguous and, in the case of cheques and other similar instruments, that the amounts should be difficult to alter fraudulently.

Symbol for the Dollar

The Commonwealth Government has decided to adopt the normal dollar symbol for the Australian dollar - a capital S

crossed by two vertical strokes, $. This will be used for all official purposes.

The officially adopted symbol, however, would not be prescribed under the Act but it was hoped that all sections of the community would follow the Government's lead to the greatest extent practicable, although the symbol could be varied within reasonable limits. For example no particular type face for the S would be laid down and while the two vertical strokes were preferred, no objection would be offered to the use of one vertical stroke. There will of course need to be scope for improvisation for a period. For example, where typewriters have no dollar symbol a capital S crossed by a diagonal stroke may be used.

Symbol for the Cent

The recommended symbol for the cent is the small letter c, with no full stop. The symbol should be placed after the figures showing an amount in cents, in the same way as a "d" is shown after a figure to represent an amount in pence. Again, it is likely that variations of the symbol will be used, as has been the case overseas, and "c" crossed by a vertical stroke or some stylised version of the "c" will be acceptable if preferred in some contexts.

Expression of Amounts in Figures

The decimal point:

The recommended position for the decimal point between hand-written figures representing dollars and cents is above the base line. This is particularly appropriate now because of the increasing use of ball point pens, which sometimes do not show a dot clearly on a ruled line. For typed and printed documents, however, the decimal point will nearly always appear on the base line.

Amounts in exact dollars:

These may be shown as either $59 or $59.00 (not 59$).

Amounts in dollars plus cents in the range from 10-99:

For example $29.10 or $29.99.

Amounts in dollars plus cents in the range from 1-9:

For example $29.01 or $29.09 (not $29.1 or $29.9).

Amounts of 10 - 99 cents:

These may be written in any of the following forms - $0.26 (particularly if written in conjunction with other larger amounts involving dollars) 26 cents or 26c. (not $.26).

Amounts of 1 - 9 cents:

$0.08, 8 cents or 8c (but not $.08, $0.8 or $.8). Thus there should always be two figures following the decimal point and one or more figures (an "0" in some cases) between the $ sign and the decimal point.

It will be noted that, when an amount is expressed in dollars and cents, only the $ symbol need be shown - $29.26. There is no need to use a "c" following the figures for cents.

Expression of Amounts in Words

Where the present practice is to write amounts in full (in legal documents for example) there will be no difficulties although the Board recommends the omission of the word "and" between the dollar and cent amounts. Where the practice is to show the dollar amount in words and the cent amount in figures, the same principles should be adopted as for writing cheques (see below).

Writing of Cheques

Particular attention has been paid to the manner in which cheques should be written. The Australian banks have been consulted on this question and have expressed certain preferences for the manner in which amounts on money should be expressed on cheques, both in words and figures.

Where the figure amounts on cheques are printed or typed, the decimal point would be acceptable as previously illustrated, i.e. $29.00, $29.08, $0.26 etc., but for hand written cheques the banks have expressed a strong preference that the existing custom of using a hyphen to separate the amounts of pounds, shillings and pence in figures should be continued for hand written cheques, e.g., $29-00, $29-08, $0-26 etc. The Board agreed that this system of writing has the double advantage of continuing the existing practice and of making cheques much more difficult to alter.

The figures for cent amounts should be the same size as the figures for dollar amounts, and in line with them, i.e., they should not be shown as a fraction, as is common in some overseas countries.

For amounts expressed in words on cheques, the Board considers that the practice which has grown up of expressing the shillings and pence amounts in figures should also be followed for amounts of cents, where these follow an amount of dollars. Where the cheque amount, however, is only for cents the amount should be expressed in words. Thus the banks have agreed that the following expression would be acceptable to them and they are recommended by the Board.

(a) The sum of Twenty-nine dollars 26

(b) The sum of Twenty-nine dollars 08

(c) The sum of Seventy-five cents.

In these instances it is not necessary to link the dollar and cent amount with the word "and". From the above examples it can be seen that if the word "cent" is used on cheques, it should not be abbreviated, but where the amount is in dollars and cents, it will not be necessary to write the word "cent" after the figures expressing the number of cents. Here again the figures used for the cent amount should be in line with the words used for a dollar amount and not shown as a fraction.

Cashier Duties

Those members of the inspectorial and Head Office staff and outstations whose duties include the issuing of licenses and banking of the monies received are advised that banks will be closed to normal banking on February 10 and 11, 1966. They will re-open on "C" day, Monday, February 14, 1966. A complete clearance of all cash and documents must be made at the end of the last banking day, i.e., Wednesday, February 9, 1966. Between the last banking day and "C" day licenses are still to be issued in £.s.d. but the amounts will be banked on "C" day in decimal currency. The duplicate copies of licenses or cash receipts will need to be converted to decimal currency to agree with the amount banked and the outstation cash abstract and Form 27.

From and including "C" day all licenses issued will be in decimal currency as will bank credit and Treasury forms.

It will be possible to use existing stationery for decimal amounts merely by ignoring the pence column.

At the commencement of "C" day all threepences, pennies and half-pennies are to be changed into 1 and 2 cent pieces.

Any of the old currency with exact equivalent may be accepted in payment of a decimal amount. This will be all of the old currency except 3d., 1d., and ½d., pieces. Change may also be given in decimal currency or old currency with exact equivalents (i.e. no 3d., 1d., or ½d., pieces to be used).

All cheques drawn on "C" day or later must be in decimal currency. Cheques drawn prior to "C" day in £.s.d. and rendered in payment on "C" day or after must have the decimal amount marked on them and banked accordingly.

Remittance books presented on or after "C" day must be written up in decimal currency. The decimal amounts must be marked on cheques by the receiving offices if the cheque has been drawn before "C" day and are in £.s.d.

Misconceptions on Decimal Currency.

Recent reports suggest that some people may be under the impression that small cash transactions will be a very complicated business when the decimal currency system in introduced. Other people appear to think that there will be useful profits to be made, in certain cases, by tendering pennies for articles priced in cents, or cents for articles priced in pence. Both these impressions are erroneous. Whever a person is able to do what is largely done now, that is tender coins which are multiples of sixpence above the selling price quoted, there can be no difficulty.

For example, if the price is 2/4d., either 2/6d., or 25 cents can be tendered and twopence received in change. For an article marked 9/1d., either 9/6 or 95 cents can be tendered and fivepence given in change. This would be the case whenever a shopkeeper nominated that he was continuing to deal in £.s.d. Where a shopkeeper nominated decimal currency, the customer could still tender 2/6d., (which would be the same as tendering 25 cents) for an article marked 21 cents, and he would get 4 cents change. The only difficulty which could arise was in the case where a purchaser

did not have enough money in his pocket to offer the next higher sixpence or 5 cents and had the "wrong" bronze coins - for example when a person with only fivepence in his pocket wanted to buy something priced at 4 cents, or with only 4 cents wanted to buy something at fivepence. Here there are no exact equivalents. In such unusual situations there may have to be a certain amount of "give-and-take" between shopkeepers and customers.

The second point which has been made was that useful profits might result from tendering pennies for articles priced in cents, or cents for articles priced in pence, by choosing certain price endings which favour the purchaser. It would not be reasonable to expect any shopkeeper to countenance this and, in any case, there would be a very small return indeed for the time and trouble involved. No one is going to benefit much from seeking out shopkeepers who are prepared to sell one-cent sweets or threepenny Christmas cards one at a time (at a price favouring the purchaser) to people who claimed not to have an extra sixpence or 5 cents (or an equivalent amount in bronze coins) in their pockets.

Another point to keep in mind is that banks will not be accepting "odd lots" of pennies. They will probably deal in £.s.d. in multiples of sixpence only, i.e., they will be prepared to credit 5 cents for each six pennies deposited, with no profit either way. The Currency Act, 1963, does not deal with questions of legal tender in transactions where mixed currency is involved. This and other related problems will be considered in detail when the additional legislation to cover the transition period is drafted some time next year.

One advantage of the 10/- unit decimal system is that the present sixpence, shilling and florin would be able to remain in circulation for some time to come without causing any confusion. These coins have exactly the same value as the 5-cent, 10-cent and 20-cent pieces and will be indistinguishable from them in diameter, colour and weight. The new and the old "white" coins can be kept in the same tills and they will be interchangeable for all transactions, whether the pricing is in decimals or in £.s.d. In particular, prices which are already expressed in multiples of sixpence (e.g., bridge tolls, admission charges to sporting events and other entertainment, etc.) will be met equally well by £.s.d. or decimal "white" coins or notes.

The 50-cent piece has no corresponding coin in £.s.d. but it will serve equally as well as a 5/- coin for £.s.d. transactions after "C-day". On the other hand, the bronze one-cent and 2-cent coins will have no exact equivalent in the existing coins, and the Treasurer has already said that first priority will be given to the minting of these two new coins so that, if possible, hundreds of millions of them are availabe by "C-day".

The Decimal Currency Board had purposely deferred some of these aspects of its publicity and public education campaign until a little later. But in view of the confusion which appears to have developed in some quarters, it seems desirable to clarify the position with an interim statement which will be amplified later.

Neither the penny nor the halfpenny will be revalued as a cent or half-cent respectively after the changeover date. Apart from a comparatively small number of coins which have a scarcity value, the great bulk of the 800,000,000 pennies and 430,000,000 half-pennies which have been issued so far will therefore be worth no more than their face value after the changeover to decimals.

NET RESTRICTIONS AT CANAL ROCKS AND IN GEOGRAPHE BAY

As a result of recommendations made by the Fishermen's Advisory Committee at a meeting held in October last at Busselton, proclamations have now been made prohibiting the use of fishing nets in the water lying within a radius of 40 chains from the centre of Canal Rocks, and also the use of set nets has been prohibited within 20 chains of low water mark in the ocean waters lying between Dunsbrough and the mouth of the Capel River.

SET NETS PROHIBITED IN INDLAND WATERS AT PT. SAMSON

A proclamation appearing in the Government Gazette of February 12, prohibits all persons from taking any fish whatsoever by means of set nets in all those portions of inland waters lying within a radius of 20 miles from the western corner of Point Samson Town Lot 1.

APPEARANCES ARE IMPORTANT

It is essential for the maintenance of Service prestige that ALL our members - particularly those in direct daily contact with the public - dress in conventional style.

Slovenly appearance is most unbecoming.

Respect cannot be commanded - it must be earned - and one of the quickest ways to earn it is by keeping oneself neat, tidy and alert.

SPERM WHALE PRODUCTION IN W.A. - 1964

Whales Taken			Average Length (Feet)		Production				Value £
					Oil (Barrels)		Meat (Tons)		
Males	Females	Total	Males	Females	Total	Per Whale	Total	Per Whale	
717	84	801	42.51	33.56	30,321	37.86	1,199	1.50	430,000

Ninety sperm whales were taken for scientific purposes. Of these 21 were males (average length 32.62ft) and 69 females (average length 33.33 ft.).

VARIATION OF WATER TEMPERATURE

That our coastal waters are influenced by seasonal currents of varying temperature is amply exemplified by a report received from a professional fisherman from the Busselton area. Last November he took the water temperature while at anchor at Canal Rocks and recorded a reading of 62°F. On the same day he took a further reading six miles seaward and recorded 74°F. Although the temperature variation seems high, the fisherman who made the report is known to be equipped with an approved type of sea thermometer.

CLEARING HOUSE

USE OF MANATEE TO CONTROL AQUATIC WEEDS IN LAKES

An experiment in Mexico to overcome the aquatic weed problem at several lakes infested with water hyacinth was started in May 1963. Because of the possible usefulness of manatee (sea cows) in controlling aquatic weeds, the Mexican Government introduced five of them into Lake Chapala, Mexico's largest lake. (Manatee are completely vegetarian and eat great quantities of weeds.) The project was initiated by Mexico's Fisheries Bureau of the Secretariat of Industry and Commerce in co-operation with the State of Jalisco and the Commission for the Promotion of Lake Chapala.

One of the manatee was killed shortly after being placed in the lake, but the other 4 were reported to be thriving, according to a September 1964 report. Fishermen frequently encounter the manatee and occasionally take them in their nets. One of the manatees was known to be ready to give birth when placed in the lake, and fishermen later reported catching and releasing a young one a little over 3 feet long, which is the size at birth.

The manatee in Lake Chapala appeared to be feeding on aquatic plants, it was reported, but because the fishermen had cleared most of the hyacinths mechanically, the animals turned to other varieties of plant pests and are expected to switch to hyacinths when that plant again becomes abundant. The co-operating agencies have posted signs explaining the programme and requesting people not to molest the manatees.

The Mexican Fisheries Bureau considers the project to be experimental. The greatest environmental problem is the lower water temperature. The manatees came from the State of Tabasco which has water temperatures of 79° to 82°F. Lake Chapala's water temperature is 68° to 72°F. and is as low as 64° F. in winter. The cooler water may inhibit reproduction. Also, it has not been determined how many animals would be needed to keep the enormous plant population of Mexico's largest lake under control. (Fisheries Attache, United States Embassy, Mexico, D.F., October 2, 1964.)

(Commercial Fisheries Review Washington D.C. December 1964)

SOVIET AIMS FOR THE FUTURE

In a New Year interview, recently, Mr. A.A. Ishkov, Chairman of the State Fisheries of the Soviet Union, said

fishing in open areas of the sea and at greater depths were their main aims for the future. Their 1965 target would be 5.6 million tons.

In the past 15 years, said Mr. Ishkov, the Soviet fleet had doubled and increased its propulsion power four-fold. In the old days, a radius of 1,500 miles was considered the limit, except for whalers, but today, ocean going ships could remain at sea for up to three months, travel at 14-16 knots, and factory ships were in great use.

On new vessels, Mr. Ishkov claimed that in 1965 the Soviet fleet would become the world's largest. A number of new classes of vessels were to come into use in the next few years, most notable of which would be the Vostock class of base ships. Carrying 14 automatically operated fishing vessels on board, the Vostock will be able to stay at sea for 125 days, in which time it would produce 10,000 tons of frozen fish, 1,000 tons of fish meal, 10 million tins of fish and about 100 tons of industrial fats.

Emphasising that fresh-water fishing was not being ignored, Mr. Ishkov said more than 10 million tons of the planned catch of 70 million for 1970 would come from inland fishing.

Hampered

At present, he continued, rivers and reservoirs were yielding only 20 to 60 lb. per acre, whereas properly farmed ponds were giving 1,000 to 2,000 lb. from the same area. The development of hydro-electric schemes had considerably hampered the natural spawning habits of sturgeon and salmon, but now, with more than 100 fish farms in operation, this had been overcome.

(Fishing News London January 29, 1965)

LONG-LINING PROMISES TO MAKE TUNA FISHING AN ECONOMIC ALL-YEAR-ROUND OCEAN INDUSTRY

By Ian Healy

One of the latest developments in the Australian tuna fishing industry is the introduction of a modified form of long-lining to catch Yellowfin. The modification is a development of the Japanese deep-water long-lining method and has been used successfully in inshore waters off the coast of the State of New South Wales in eastern Australia.

It helped to bring the Australian tuna catch in the 1963-64 season to a record figure. When the season ended early in June the catch totalled 8,974 short tons (17,947,000 lb.) 3,475 short tons (6,950,000 lb.) more than in the previous best year, 1962-63 and will be worth about £A500,000 to the fishermen.

Tuna appears certain to emerge as top fish, by weight, in the overall Australian fin fish catch for the year, supplanting mullet. Until the 1963-64 season, the Australian tuna catch consisted almost entirely of Southern Bluefin, caught by the live bait pole-fishing method off the southern coast of New South Wales, mainly from October to December, and off the coast of the State of South Australia, from January to April.

But fishermen and Australian Government agencies have been studying possible means of expanding the fishery and in the two previous seasons, a small number of New South Wales fishermen turned experimentally to the modified form of long-lining for Yellowfin when the pole-fishing for Bluefin ended.

This year others, encouraged by the record Bluefin catches, began long-lining when the pole-fishing ended in January. Between January 20 and early March, they landed 200,000 lb. of Yellowfin. One fisherman, J. Greco, from the fishing port of Ulladulla, took 4,000 lb. in a day with a long-line armed with 200 hooks.

* While others trolled for the tuna, one used a long-line in conjunction with Danish seining, the long-line being set when Yellowfin were seen to follow the cod-end up to the boat. The modified form differs from the Japanese method of long-lining for Bluefin in the Tasman Sea in that the line is used in much shallower water, the main line is shorter and the branch lines attached at closer intervals. Buoys generally are spaced at every three hooks.

The branch lines, two to three fathoms long, are of nylon or kuralon and various types of wire trace are being used. These include stainless steel and monel wire, stainless some of which is plastic-coated, galvanized and small quantities of Japanese 27 x 3 x 3 and 29 x 3 x 3 tuna long-line trace. The hooks being used are mostly Japanese long-line type from 3.6 to 4.0 sun.

Some fishermen are using synthetic lines, but these are costly and most continue to use sisal and manila. Those who had earlier experience in long-lining improved their hauling gear considerably for the 1963-64 season and most boats operated efficiently with horizontal disc-type haulers. The vertical hauler used by Japanese long-liners has not appeared so far on the Australian scene.

* In its efforts to help the industry expand, the Australian Government, after the 1962-63 season, sent a three man team to Japan, Hawaii and American Samoa to examine tuna long-lining methods, vessels, gear and technical developments and to investigate economic aspects of developing long-lining in Australia. The team members - experts from the Australian Development Bank, the Australian Commonwealth Scientific and Industrial Research Organisation (C.S.I.R.O.) and the Federal Department of Primary Industry - were well aware of the aim to see the industry flourish on a year-around basis. Such an aim makes it necessary to fish deep sea stocks of tuna for which the live bait pole-fishing method is not suitable.

Gauging from reliable data on catches achieved by Japanese fishermen in waters off the east coast of Australia, the team considered that year-around deep sea long-lining could be undertaken in these waters. They estimated, however, that Australian fishermen would not be able to operate profitably in deep sea long-lin ng on a year-around basis unless there was a very substantial change in the fishery's present cost/price relationship.

As part of their investigation, the team made a detailed study of our types of Japanese long-line tuna fishing boats and found that all would have to be modified to meet Australian conditions and regulations. Assuming that the Japanese vessels were operating profitably in these waters, they found the Japanese had these comparative factors in their favour:-

1. Much higher prices received for catch landed (about £A125 per short ton compared with about £A50 in Australia);

2. Revenue obtained from sharks, marlin and other fish caught in addition to tuna;

3. Costs of operations, specially labour costs, at much lower rate than applies in Australia.

The team made detailed calculations for operating the four boats from eastern Australian ports by Australian fishermen and assessed that at £A50 a short ton, there would be considerable annual losses and even at the price received by the Japanese, the vessels would not return a profit under Australian conditions.

The team's recommendation was that consideration be given to the question of what might be done to help develop modified long-line gear and methods suitable for part-time use by Australian fishing vessels when the live bait pole-fishing method is not operable. This is being carried out.

New South Wales fishermen, with the help of the Fisheries Division of the C.S.I.R.O. and the Fisheries Dvision of the Federal Department of Primary Industry, are now hoping to develop the modified inshore technique for use in more distant waters.

(Ocean Fisheries San Francisco January 1965)

TO EXPLORE BOTTOMFISH AREAS OFF AUSTRALIA

Surveys of the bottom fish resources on the high seas off Australia are scheduled to be undertaken in 1965 by the Japan Fishery Agency. Late in 1964 the agency disclosed that the grounds to be studied are not now being fished by other countries, and are believed to hold promise of substantial productivity.

(Ocean Fisheries San Francisco January 1965)

WORLD PRODUCTION RUNS FAR AHEAD OF 1963

World fish meal production during the first three-quarters of 1964 aggregated at least 2,145,572 tons, being well ahead of the 1,784, 361 tons during the first nine months of 1963. Figures for Japan are not included.

Peru alone accounted for nearly one-half of the world production, with 1,059,070 tons, against 826,673 tons in 1963. South Africa was the second-ranking country (with S.W. Africa included), producing 236,792 tons against 218,323 tons during the same period of the previous year.

The United States, with 167,450 tons, registered a decline from 178,807. Chile's production was 114,236 tons, compared with 75,019 tons in 1963 to September 30.

(Ocean Fisheries San Francisco January 1965)

S. ARABIAN RESOURCES SURVEYED

Could Support an Industry, says Expert

The waters off South Arabia have never been famed as fishing grounds. Yet they are sometimes rich in tuna and other commercially important fish which could support a thriving fishery. A report by a master fisherman of the Food and Agriculture Organization, Mr. Tatsuso Suzuki, of Japan says:-

> "The waters abound with yellowfin tuna and several other species very suitable for the world market, such as kingfish and rock lobster, so that there appears to be a good possibility for the development of fisheries in South Arabia".

Following a request from the government of the Federation of South Arabian, FAO sent Mr. Suzuki to the Gulf of Aden, during 1962-63, to carry out exploratory fishing and instruct local fishermen in the use of tuna long-lines. According to FAO world fisheries statistics, Aden already catches almost 60,000 tons a year. This is double the 1960 take, and three times what was caught 15 years ago. But fisheries who have worked the area have no doubt the catch could go much higher.

Promising

Yellowfin fishing in the Gulf looks particularly promising. Mr. Suzuki caught over 1,500 tunas, mostly yellowfins. They averaged 37 inches in length and 25 pounds in weight.

"This is a particularly useful size for the tuna canning industry; the fish furthermore is of excellent quality, well suited for international trade," his report says.

He also found that South Arabian waters are rich in sailfish, shark, striped and black marlin.

Another of Mr. Suzuki's tasks was to see if tuna can be caught in the Gulf during the southwest monsoon in August-September, known locally as the "shamal". Gulf fishermen stop fishing during shamal. But Mr. Suzuki did catch yellowfin during the shamal.

"This caused some excitement among the fishermen, who had been convinced that yellowfin tuna were not present at this time of the year, and furthermore, could not be caught during rough weather," says his report.

Monsoon Tuna

He also confirmed that tuna could be taken during the "azyab", the northeast monsoon from October to March. On one trip in late January he landed tuna on 85 per cent of the hooks on his long-line.

"Also, the results were obtained in a year in which more than the normal number of fishing days were lost due to constant gales," his report says.

An advantage to fishing in South Arabian waters, Mr. Suzuki found, is that the grounds are close to Aden, Shuqra and other harbours. The Japanese are masters of long-lining and during his assignment the FAO expert designed three types of long-lines especially suitable for South Arabian fishing conditions, and he trained Arabian fishermen how to use them. Better gear, with trained fishermen working it, could make tuna fishing a profitable business in the Gulf of Aden, he found.

"In itself, large catches of tuna will not automatically result in a developed fishery," Mr. Suzuki's report warns, however.

Abundance

The report urges establishment of a fishing harbour with ice-making and refrigeration plants, modern market, boat-building and repair yards, and a training institute for local fishermen. Roads and transport will also have to be improved throughout the area. But fish is there all year round and sometimes in abundance.

The work of Mr. Suzuki and Mr. M.V.T. Hinds, the chief local fisheries officer, has prompted the government of the Federation to launch a major programme of fisheries

development, getting under way early next year. FAO, along with the United Nations Special Fund, will help out with that too!

(Fishing News London January 29, 1965)

RUSSIANS EXPLAIN THOSE "SPYING" TRAWLERS

The Soviet Minister of Fishing recently launched an indignant rebuttal of certain American rumours which frequently appear in the press, including a feature by Mr. Sulzberger in the "New York Times". They all related to alleged "espionage" by the Soviet fishing fleet. Mr. Ishkov dismisses these allegations as "false from beginning to end" and "malicious and stupid slander". Referring to the growing use by Soviet trawlers of radio-location and fish-searching equipment, he notes that there is no secret about this, and that all advanced countries are now adopting such methods.

Aid to Cuba

One of the main lines of American criticism has been the aid given by USSR to Cuba in developing is fishing industry, and Mr. Ishkov gave the following facts:

In the summer of 1962 the first five Soviet medium-sized trawlers arrived in Cuba. Cubans sailed on them with Soviet fishermen to learn the trade. The whole catch went to Cuba and the Cuban Government purchased the trawlers to form the core of the new fleet.

Now, says Mr. Ishkov, Cuba has 40 fishing co-operatives, and the fleet is growing. Some 120 Cubans so far have been trained on Soviet vessels, about 200 have been trained at Kaliningrad and are working on the construction of Havana's new fishing harbour.

(Fishing News London January 29, 1965)

UNIVERSITY'S STUDY OF ATTRACTING DEEP-SWIMMING ALBACORE TUNA TO SURFACE

The Tokai University of Japan announced in October 1964 the results of eight years of field testing different methods of attracting deep-swimming albacore tuna to the surface where they can be fished with pole-and-line gear.

The study revealed that trolling a line to which 50-60 artificial (vinyl) squid and octopus are attached is very effective in attracting albacore to the surface, even to the stern of vessels. Hooks are not used, thereby avoiding the danger of hooked albacore escaping and scaring away the fish school.

There were some schools that could not be lured to the surface without chumming with live bait (sardines) and the laboratory is now planning to experiment with artificial sardine lures next year. (Suisan Keizai Shimbun, October 9, 1964).

(Commercial Fisheries Review Washington December 1964)

AUSTRALIA'S SEAFOOD EXPORT TRADE RISES 12%

Improved prices and increased exports in the financial year which ended June 30, 1964, brought the value of Australia's seafood exports to the record level of $18,592,000, 12 per cent higher than in 1962-63. Main factors were:-

* Improved prices for Australian crayfish tails in the American market;
* A rapidly expanding demand for scallops in France;
* A record tuna season with increased exports.

Exports to the U.S.A. represented 64% of total exports of marine products, while France and Japan took 11% each and Britain took 6%. The bulk of crayfish exports went to the U.S.A. where record prices were obtained for crayfish tails - up to U.S. $2.10. The main crayfish exporting State was Western Australia, which provided 63% of whole crayfish exports and 84% of crayfish tails.

Prawn exports went mostly to Japan, the U.S.A. and South Africa, while increasing quantities of tuna went to North America. Though scallops are not shown as a separate item in Australian export returns, it is estimated that 750,000 lbs. of scallops, valued at about £185,000 were exported ($414,000). Of this amount 655,000 lbs. went to France, the balance to Belgium, Britain and New Caledonia.

(Ocean Fisheries San Francisco January 1965)

PERU TOPS JAPAN

Peru in 1963 caught more fish than any other nation, the Food and Agriculture Organization reported recently. Figures collected by FAO show that Peru caught 6,901,300 metric tons, compared with the Japanese 1963 catch of 6,697,800 metric tons. Japan had been the world's number-one fishing nation since FAO becan collecting world catch statistics in 1947.

The figures released are among those which will appear, in detailed breakdown, in the current Yearbook of Fisheries Statistics. They are compiled from statistical data submitted by fishing countries.

The bulk of the Peruvian catch was made up of anchoveta, a small fish that swims in great schools a few miles off the Peruvian coast. The anchoveta is used for reduction to fishmeal and oil for animal feeding. Peru is the world's leading exporter of fishmeal. Peru's catch now is close to 150 times as large as the 47,700-ton figure of 1948.

(Fishing Gazette New York December 1964)

SAVAGE PIRANHAS

Concern is being expressed over the lack of restrictions governing popularization of the savage piranhas, a small exotic fish now being imported into this country from South America, according to Marion Toole of the Texas Parks and Wildlife Department. Members of the American Fisheries Society, he said, have recommended "a tough federal law".

Toole said the warm waters of South Texas, particularly in the Rio Grande River area, could become infested with the piranhas which, with all their reputed ferocity, grow no larger than ten inches. He said the danger arises from the orange-bellied fighter's habit of travelling in huge schools. With their razor-sharp triangular teeth which interlock between lower and upper jaws, they bite chunks out of both man and fish and these pieces are swalled whole. They can make a skeleton of very large fish within a few minutes. This "killer fish", according to Toole, is "a close relative" of the harmless Mexican tetra minnow which abounds in Falcon Lake and is desirable for bait.

(Fishing Gazette New York December 1964)