



---

Vol. II, No. 4

April 1, 1953

---

SEIZURE OF UNDERSIZE FISH

Section 24(1) of the Fisheries Act, 1905-1951, gives power to an inspector to seize undersize fish, and provides that "all such fish and all other fish contained in any boat or in any basket or other receptacle for fish containing more of such fish than one-twentieth in number of the whole number of fish contained in such boat, basket or receptacle shall be forfeited, and any inspector may seize the same".

Recently many legal size crayfish have been seized in pursuance of this power, but it has become the practice to determine the percentage of undersize fish in relation to all fish in a receptacle by weight, instead of by number, which of course simplifies the inspector's job. A case heard at the Fremantle Police Court towards the end of February shows how dangerous this practice is, and indicates that in the future the number of fish, both undersize as well as legal size, must be counted.

All told the consignment the basis of the charge consisted of 16 bags, each containing approximately 100 fish. The bags were emptied into a tank, and from the first 5 bags, which had been emptied one at a time, a total of 18 undersize crayfish were seized. Then owing to a misunderstanding 4 bags were emptied into the tank together. From this lot of fish the Inspector seized 73 undersize (approximately 18%). From the next bag, which was emptied separately, he seized 22, and from the next 20. The total number seized was therefore 133, of a total weight of 104 lb. The weight of legal size fish was 406 lb., and having regard to the fact that 106 lb. was more than one-twentieth of 510 lb., the inspector seized all fish, both legal size and undersize.

At the hearing two points emerged from which important lessons may be learned.

Firstly, although the number of undersize fish in the tank was high, the meaning of the words "basket or other receptacle for fish" could not be stretched to include a tank, and consequently the legal size fish found in the tank should not have been seized.

Secondly, although the number of undersize crayfish had been counted, the inspector did not count and consequently did not know the number of legal size crayfish; hence the percentage of undersize could not be determined.

The defendant's solicitor made the following submissions to the Bench -

1. That the fish had been caught outside the State jurisdiction and since the Commonwealth had legislated for these waters then the State had no jurisdiction over their size.
2. For the same reason the defendant could not be prosecuted for consigning undersize crayfish within the jurisdiction.
3. That the fish were solely for export and the State therefore had no jurisdiction.
4. That there was no proof that the fish were of the species Panulirus longipes.
5. That the Inspector had no right to seize the whole catch because he had not established that the undersized fish represented 5% by number of the whole as required by the Act.

The magistrate dismissed the case on the ground that the inspector had no right to seize the legal size crayfish.

An appeal is being lodged, but in the meantime it is essential that in all future cases where legal size fish are seized pursuant to the power included in Section 24(1), the number of both legal size and undersize fish be determined by counting, and the actual numbers of both set out in the report of the seizure.

  
A. J. Fraser  
SUPERINTENDENT.

STAFF NOTES

The Superintendent visited the eastern States during March, principally for the purpose of discussing with the Commonwealth Director of Fisheries (Mr. F. E. Anderson) the question of administration of the Fisheries and Pearling Acts recently passed by the Federal Parliament. While in Sydney he made contact also with Dr. H. Thompson, Chief, and other members of the staff of the Division of Fisheries, C.S.I.R.O., Messrs. G.P. Whitley and E. le G. Troughton, of the Australian Museum, J.A. Tubb, formerly Director of Fisheries, North Borneo, who is off to Hong Kong to take up another post, and many others.

Mr. E. J. Brownfield, Clerk-in-Charge, has been seconded to the State Hotels Department where he will act as Accountant pro tem.

Inspector A. V. Green has resumed duty after annual leave. Inspector A. K. Melsom, who had been relieving him, joined m.v. "Lancelin" at Bunbury for a couple of weeks.

Inspector F. A. L. Connell and Assistant Inspector G. Coombes are at present on annual leave. Inspector J. E. Munro will enter on annual leave on April 8.

Mr. I. Cearns, who has been relieving Mr. I. Bartholomew, on national service duty, has now resigned, and his place has been taken by Miss Beverley Eaton.

P.V. "Kooruldhoo" and P.V. "Garbo" sailed for Geraldton and the Abrolhos on March 19. The former is under the command of Inspector A. J. Bateman, assisted by Assistant Inspector L. C. Oliver, and the latter of Cadet Inspector N. E. McLaughlan; assisted by Assistant Inspector V. J. Sinclair.

Inspector H. J. Murray has been receiving medical attention for an injured hand sustained on duty. It is understood the injury is responding to treatment. Mr. Murray did not cease duty.

Inspector M. Goodlad had the misfortune recently to injure his foot while inspecting one of the luggers at Broome. His injury is also progressing favourably.

Captain H. C. W. Piesse will return to Fremantle with m.v. "Lancelin" before Easter. His crew comprises Assistant Inspector J. C. Thair and Cadet Inspector D. Wright.

#### C.S.I.R.O. DIVISION OF FISHERIES

Mr. J. M. Thomson, who recently spent some time in the West, will sail for overseas on April 1 to further his biological studies. He expects to be away until the end of the year.

Mr. K. Godfrey has temporarily left m.v. "Lancelin" and moved over to Port Lincoln and Ceduna, South Australia, where he will continue Australian salmon and ruff investigations. He will be absent for about six weeks.

#### OBITUARY

It is with very great regret that we record the sudden death, on March 19, of the Hon. A. A. M. Coverley, M.L.A., who was Minister for Fisheries from 1939 to 1947. The late Mr. Coverley, who in recent years had suffered greatly from ill health, worked very hard during his years of office to promote the welfare of the fishing industry. He was always a firm supporter of the "under dog", and fishermen generally are greatly indebted to him for many of the advantages they have gained over the last decade or so. A man of forthright views, he was nevertheless a man of very kindly disposition and genial nature, and he will be missed by a wide circle of friends.

GOLDEN GLEAM FISH PROCESSING PTY. LTD.

Mr. James Davey, a former crayfisherman of Geraldton, has been appointed manager of the Golden Gleam fish processing works in succession to Mr. Colin Blakeway, who has resigned.

WELL-KNOWN FISHERMEN DEAD

The death occurred early in February at Carnarvon of Mr. Dines ("Job-job") Jacobsen, who nearly all his life has been associated with whaling, fishing and crayfishing. The late Mr. Jacobsen, who was born in Denmark, was well-known and highly respected in the northern parts of the State.

We learn also of the death at Geraldton on March 14 of Mr. Felice R. Miragliotta. The late Mr. Miragliotta had fished for crayfish in Geraldton waters for many years.

FISHING-BOATS LOST

While under tow by m.v. "Suda Bay" en route for North Island, Houtman's Abrolhos on March 5, the licensed fishing-boats "Lady Constance" (G.36) and "Nord Kap" (G.112) foundered about 12 miles north-west of Geraldton. "Lady Constance" was a 17-ft. auxiliary launch valued at £350. She was owned by Mr. George Barker. "Nord Kap" was a 16-ft. launch owned by Mr. Karl Hustedt and valued at £600.

INJURY AND WORKERS' COMPENSATION

In the event of claims being received for injuries sustained in the course of employment, due consideration will be given as to whether reasonable precautions were taken by the officers concerned.

This Department provides, where necessary, certain protective clothing such as knee and thigh boots, rubber gloves and overalls. In respect of accidents

which would not occur or which would be rendered minor if such protective clothing were worn, liability may not be accepted if officers decline to take advantage of issues available.

#### ABROLHOS ISLAND SEASON

Inspector Bowler reports that the crayfish carrying vessels "Eureka" and "Linda" arrived in Geraldton on March 17 with the first of the season's production. The former had 90 bags from the Wallabi Is. and the latter, 121 bags from Rat Island. This production is considered low and is attributed by the fishermen to the very low tides, and strong southerly winds prevailing in the first half of March.

#### REPORT ON THE 12-MILE BEACH, HOPETOUN

The following observations made by Mr. L. G. Smith, Technical Officer, are of interest as indicating somewhat the changes that occur at this one-time important salmon fishery. Mr. Smith has been visiting the area in connection with the tagging of ruffs and will continue to provide reports on the condition of the 12-Mile as opportunity occurs.

#### Extract from Diary, March 5, 1952

6.30 a.m. went to the 12-Mile. Wind S.E., tide low, gap only 2 yards wide inside the mouth. This narrowness extends about half the length of the 12-Mile and widens from 2 yards to 10 yards. The deepest portion is 18 inches. Practically the whole of the 12-Mile is a bed of sand about 8 feet high. No salmon seen.

#### February 17, 1953

Since 1952 the 12-Mile has improved considerably. The Gap and Channel extending through the pool has widened to about 15 yards and the sand inside has been flattened to the extent that at low tide it is now covered with 6 ins. of water - during high tide about 18 ins. of water instead of 8 ft. of sand last year. 30 tons of salmon were observed outside the Gap. I believe these fish enter the 12-Mile during high tides at night and return again to the sea

before daylight. Chipperfield says salmon do not enter the 12-Mile, however they do go into the 13-Mile and spread over the reefy bottom where they are safe from netting. I think the 12-Mile is too shallow during the daytime for them to enter, on account of the long narrow channel before the fish get to a foot or so of water. The risk is too great. With a heavy westerly blow the 12-Mile should deepen. The salmon caught in the Hopetoun-Esperance area during the past years have been canned.

W.A. FISH PRODUCTION

<u>Species</u>	<u>1952</u> lb.	<u>1951</u> lb.
Crayfish	8,415,425	7,794,931
Salmon (including salmon trout)	3,008,837	3,409,459
Ruffs	780,249	737,299
Snapper	679,801	764,078
Mullet	529,990	560,861
Cobbler	503,359	252,543
Sand Whiting	351,650	367,929
Jewfish	267,266	201,433
Yellow-eye Mullet	253,042	327,166
Pilchard	177,980	Included in Other Species
Trawlers	137,897	586,055
Shark	128,297	158,606
Tailer	127,030	158,468
Skipjack	65,133	81,126
Garfish	53,970	51,988
Yellow-fin Bream	44,409	56,925
Pike	38,187	Included in Other Species
Samson Fish	30,320	26,045
Prawns	28,213	23,597
Carried forward	<hr/> 15,621,055	<hr/> 15,558,509

<u>Species</u>	<u>1952</u>	<u>1951</u>
Brought forward	15,621,055	15,558,509
King George Whiting	22,690	35,035
Crabs	21,403	39,841
Perth Herring	21,273	25,023
Cod	15,525	19,138
Black Bream	13,508	17,325
Leather Jackets	12,953	Included in Other Species
Groper	12,235	8,906
Yellow Tail	11,337	Included in Other Species
Spanish Mackerel	10,858	do.
Snook	8,527	do.
Silver Bream	7,087	do.
Skate	6,984	do.
Mulloway	5,556	5,878
Sweep	5,356	Included in Other Species
Other Species	37,737	237,660
<b>TOTAL:</b>	<b>15,834,084</b>	<b>15,947,315</b>

LIST OF CONVICTIONS RECORDED, JANUARY 1 TO MARCH 31,  
1953

Date	Defendant	Court	Charge	Result
24.2.53	F. Carnemolla	Fremantle	Undersize crayfish	Fined £5
"	" "	"	" "	" £5
23.3.53	J. Alves	"	" "	" £2
27.1.53	S. Ramage	Geraldton	" "	" £2
"	Felice R. Miragliotta	"	" "	" £5

Res

Date	Defendant	Court	Charge	Result
27.1.53	F. Jacobsen	Geraldton	Undersize crayfish	Fined £3
"	R. Fenner	"	Unlicensed Fishing Boat	" £5
"	J. T. Hewitt	"	Undersize crayfish	" £3
"	D. McDonald	"	" "	" £5
"	P. Grego	"	Obstruct Inspector	" £10
6.3.53	P. Tipping	"	Undersize crayfish	" £7
5.3.53	" "	"	Unlicensed Fishing Boat	" £2
4.3.53	K. Bone	"	Undersize <sup>Boat</sup> Crayfish	" £2
5.3.53	N. G. Pilatis	"	" "	" £2
"	C. Hams	"	" "	" £3
4.3.53	J. Clingan	"	Not holding professional fisherman's license	" £3
5.3.53	T. Grego	"	Undersize Crayfish	" £5
"	S. Ramage	"	Not holding Professional fisherman's license	" £3
"	R. Carr	"	Undersize Crayfish	" £20
6.3.53	F. Cato	"	" "	" £5
8.3.53	Felice R. Miragliotta	"	" "	" £3
24.2.53	J. Bowra	Perth	Fishing in Closed waters	" £5
"	Lloyd Bennetts	"	do.	" £5
"	L. Bennetts	"	do.	" £5
"	" "	"	Not holding Amateur Fisherman's License	" £2
23.3.53	L. Paparello	"	Undersize Crayfish	" £2
"	S. Mezzina	"	" "	" £2
"	Frank Miragliotta	"	" "	" £2
"	" "	"	" "	" £5
"	R. Green	"	" "	" £2
"	F. Pansini	"	" "	" £2
25.3.53	E. Head	"	Fishing in closed waters	" £5
14.1.53	A. C. Stone	Pinjarra	Fishing in closed waters	" £5
21.1.53	B. C. Dawe	"	do.	" £5

"LANCELIN'S" SOUTH-WESTERN CRUISE

Mr. K. Godfrey, of Division of Fisheries, C.S.I.R.O., has furnished details of the experimental work carried out between February 16 and March 16, on which date he left the vessel temporarily. A summary of his report is published for the information of the staff.

It was decided to take advantage of "Lancelin's" presence in South-Western waters during the calms to thoroughly test the prawn-trawling gear to be used later in the year in northern waters. Meelup Bay (west of Busselton) was chosen for the tests because of the fine white sand bottom and shallow water (2-3 fathoms) available. Observations on the working of the trawl were made by means of a water glass from a dinghy towed astern.

Under these conditions it was possible to see quite clearly the behaviour of the otter boards and warps and the net itself under actual working conditions. The 6-fathom net, with 60 lb. otter boards and 20-fathom warps, was towed at a speed of 2 to 3 knots. Adjusted according to Whitelaw, the boards worked exceedingly well, and in all respects the net was fishing in a manner similar to those seen in the films shown at the last inspectors' conference. No chain was attached to the lead line in this instance.

Many immature leatherjackets, whiting, stingrays, etc., were observed entering the net, but later escaped through the larger mesh of the wings. Bigger fish, which were unable to escape through the wings were swept into and retained in the pocket.

During this test the vessel was stopped to observe the effect on the net. The otter boards then lay flat on the bottom, but as soon as the vessel was steamed ahead once more the boards were pulled into their normal fishing position and the net continued fishing without further ado.

A further test in 12 fathoms on gravel and weed bottom was similarly successful, and some small fish,

scallops and sponges were taken.

On the next test, a length of chain was lashed to the leadline along its whole length, and the net worked equally as well. On this occasion numerous small fish, including leatherjackets, two small soles, a large flounder and 3 crabs, were caught.

Finally, a test with a completely new set of gear was made. The rig consisted of a 6-fathom tarred net of much heavier construction, and with 65-lb. otter boards, and four "legs" each 2 fathoms in length were fitted between the boards and wings.

At  $1\frac{1}{2}$  knots the new net worked admirably, with the boards towing at the correct angles, and when speed was increased to  $3\frac{1}{2}$  knots it was found that the centre of the cork line was about 6 feet ahead of the leadline. A stay rope with an aluminium float attached to the cod-end was sufficient to keep the bag off the bottom.

These tests, together with others with slightly different rig, indicate that with some minor modifications, the nets now available should prove suitable for use in the Shark Bay and Exmouth Gulf areas next winter.

During "Lancelin's" stay in the South-West 20 crayfish pots were worked. No crays at all were taken in Geographe Bay, the areas worked being up to 20 fathoms. However, the Yallingup-Canal Rocks area gave encouraging results. A total of 91 crayfish was taken, 90 northern crayfish (Panulirus longipes) and 1 southern crayfish (Jasus lalandii). The northern crayfish, which comprised 75 females and 15 males, included 7 spawners and 6 "whites". The total weight of these fish was 266 lb. (average just under 3 lb.).

Trolling lines were towed whenever the vessel was steaming. Although no large schools of tuna were observed - it was just the reverse in the same area and over the same period of 1952 - 12 southern bluefin, one only 30 cm. (l.c.f.) in length, were hooked. One reason for the absence of tuna

schools was undoubtedly the absence of pilchards, which are normally present. To the end of February the stomachs of the tuna contained chiefly leatherjackets and blue mackerel but no pilchards. Several snapper were taken by handlines.

MEASUREMENT OF MESH OF NETS

Recently an inspector measured the mesh of a net while dry, and as a result of the measurement thus made decided the mesh was smaller than that defined by proclamation and seized the net. The attention of all members of the staff is once more drawn to the relevant part of the regulation (No. 14) which lays down the procedure, and this must be followed most strictly in future -

14.....The size of the mesh shall be determined by measuring from knot to knot on the inside of the mesh when wetted ready for use and stretched so that the opposite knots on the alternate corners are in contact. In cases of dispute a half-pound weight shall be slung or attached to one knot of the mesh to be measured and the space between that and the opposite knot shall be measured. In the event of the net being dry, the part to be measured shall be soaked either in fresh or salt water for not less than ten minutes, and the dimensions of a mesh or meshes of the portion so soaked shall thereupon be determined.

In future, officers will be required to state in any report of the seizure of a net of illegal mesh whether the requirements of regulation 14 have been complied with.

BANDING OF WILD DUCKS

The practice of attaching small numbered rings on to the legs of birds, for the purpose of learning about their life history, has been practised in Europe since the end of the last century. Informative and intimate details have been learnt about such things as migration habits, dispersal, life span, homing tendencies and the like. This information, obtained in such a way, is a sound basis for conservation plans for maintaining a large population.

Early in November, 1951, the Department, on the recommendation of the Fauna Protection Advisory Committee, decided to embark on a wild duck banding programme in this State. A sub-committee comprising Dr. D. L. Serventy and Mr. A. R. Tomlinson with the Chief Warden of Fauna, Mr. A. J. Fraser, as chairman, was appointed to draw up the programme. Mr. J. Traynor, Fauna Warden, was given the arduous task of carrying out all field operations.

On the arrival from England of 3,000 aluminium rings, each bearing a serial number and an inscription "Return to Fisheries Department, Perth", a banding test was made at Queen's Gardens, Perth, on June 4, 1952. The banding programme commenced officially on June 24, 1952, when the Minister for Fisheries (Mr. A. V. R. Abbott, M.L.A.) placed ring number 1071 on the leg of a black duck. It is not certain whether it was the pathetic look in the eye of the duck or the keen interest he has always taken in our fauna, but Mr. Abbott offered a reward of one guinea for the return of this ring (with the duck attached) to the Department. Since then several persons have been disappointed to learn that the reward is limited to that one ring.

To date approximately six hundred ducks have been banded at Queen's Gardens, Lake Karrinyup, Yanchep, Wardering Lake, Narrikup, Meralup, Wansborough and Big Bootine Swamp, Beermullah. Full particulars of the numbers and species ringed and the recoveries to date are shown on page 105.

In pioneering work of this nature many difficulties have to be overcome and perfection in trapping operations may only be attained on the basis of trial and error. Each locality has its own peculiarities

and the success or failure of taking ducks in their native environment must to a large extent depend upon the initiative and ingenuity of the operator. We are indeed fortunate in having such ideal places as Queen's Gardens, Yanchep and the Lake Karrinyup Country Club, which are in close proximity to the city, for trapping stations. Experience here has shown that most difficulties in an extensive banding programme are encountered in establishing trapping stations in country districts.

Different types of traps have been used with varying results. The timber-frame trap covered with 2" mesh netting with a front door hinged for springing was discarded in favour of an iron-frame collapsible funnel trap covered with similar netting. The latter type proved more effective and did not subject the birds to the injuries caused by the spring door of the timber-frame trap. The iron-frame funnel trap attached to a wooden float has also been tried with moderate success. At Wardering Lake, 15 miles west-north-west of Woodanilling, Warden Traynor constructed a trap by driving sapling stakes into the bed of the lake and covering the area with wire netting. A large number of ducks were subjected to the indignity of having a ring attached their legs, and it is certain that Warden Traynor, by the time he had finished, was as wet as the proverbial shag. Photos of the traps will appear in the next issue of the Bulletin.

At Queen's Gardens, where the ducks are fed a daily ration of bran and pollard, little difficulty was experienced in enticing them to enter the traps for food. In other places the best results have been obtained by sprinkling liberal quantities of wheat in and around the traps. That the ducks are not to any great extent affected by handling or by ringing has been proved by the number of birds that have re-entered the traps. One young bird put in an appearance on five consecutive days.

Trapping results to date may be considered very satisfactory. In New Zealand during the initial year of similar operations 47 birds only were captured. The success of the field work in this State is due, it is believed, to the policy of the Department in placing that work under the supervision of one officer and to the enthusiasm of that officer. Warden Traynor is doing an excellent job, and there is still more hard work to be done if the desired results are to be achieved.

Particulars of the rings returned to the Department are shown on page 106. The return of rings is a very important part of the banding programme, and as much publicity as possible should be given by the staff generally to this matter. The ultimate success of the banding operations will depend upon the co-operation of the sporting public in returning all rings found forthwith to the Department, together with information as to the species of duck and where and when it was shot.

DUCKS BANDED IN WESTERN AUSTRALIA FROM JUNE 4, 1952,  
TO MARCH 24, 1953.

Locality	Species							Total Banded
	Black Duck	Mallard Cross	Moor Hen	Coot	Mountain Duck	Grey Teal	Blue Bold Coot	
Queen's Gardens	258	9	4	4				275
Meralup near Dumbleyung					4			4
Wansbrough near Tambellup					11			11
Narrikup	10							10
Yanchep	87							87
Wardering Lake Woodanilling	11					110		121
Karrinyup Lake Perth	43			6		29		78
Big Bootine Swamp 15 miles N.W. Gingin	33					65	2	100
TOTAL:	442	9	4	10	16	204	2	686
						Repeats		134
						Total Ducks Trapped		820

BANDING OPERATIONS

Recovery of Rings to March 24, 1953.

No.	Date Ringed	Place where Ringed	Date of Recovery	Place where Recovered	Distance Travelled
<u>BLACK DUCK</u>					
1105	21.1.53 7 p.m.	Queen's Gardens Perth	2.2.53	Avon River near Northam	50 miles
1316	31.1.53	Yanchep	8.2.53	10 miles south of Fremantle	50 "
1097	21.1.53 9 a.m.	Queen's Gardens Perth	8.2.53	Gillingarra, Moore River	68 "
1190	22.1.53 8 a.m.	Queen's Gardens Perth	8.2.53	Avon River, Burgess Siding	56 "
1351	12.2.53	Wardering Lake, 15 miles WNW Woodanilling	15.2.53	10 miles N.E. of Kojonup	10 "
1280	27.1.53	Yanchep	19.2.53	Yunderup	71 "
1457	24.2.53	Karrinyup Lake, Balcatta	1.3.53	half way between Wanneroo & Bills- brook, commonly known as half way springs	12 "
1276	27.2.53	Yanchep	3.3.53 6.30p.m.	25 miles north of Perth (Wanneroo district)	18 "
1211	23.1.53	Queen's Gardens Perth	18.3.53	Swamp between Kelmscott and Forrestdale	20 "
<u>GREY TEAL</u>					
1339	12.2.53	Wardering Lake	21.3.53	Capel Lakes	100 miles



THE PEARLSHELL INDUSTRY IN WESTERN AUSTRALIA

- By -

E. J. BROWNFIELD

(Deputy Superintendent, Fisheries Department, W.A.)

---

(Extracted - with original page numbers - from  
W.A. Fisheries Department's Monthly Service  
Bulletin, Vol. II, No. 4, April 1, 1953.)

THE PEARLSHELL INDUSTRY IN WESTERN AUSTRALIA

- by -

E. J. BROWNFIELD

Deputy Superintendent, Fisheries Department, W.A.

Early attempts to harvest the wealth of pearl-shell in our northern waters were by naked or swimming diving by both white and aboriginal divers. Operations were confined to shallow water and diving periods were necessarily of short duration - shell being plentiful and handy. By the 1870's pearlshelling had reached the status of an industry with an annual output value of nearly £100,000 per annum. As operations were extended into deeper water with consequent increased risks and worsened living conditions, diving became a job entirely for Asiatics.

An exception to the foregoing was the Shark Bay pearlshell fishery which being confined to the shallow banks of Shark Bay, employed the dry-shelling and hand-dredging methods. This fishery will be described later.

While the most important centre of pearling in Western Australia is, and always has been, Broome, operations were in the past also conducted from Cossack, Port Hedland and Onslow. The latter port's fleet has now dwindled to one solitary lugger and no pearling is now based on either Cossack or Port Hedland.

Pearling in deeper waters (10-20 fathoms) introduced the orthodox pearling of the day. This was a sailing vessel, large enough to remain at sea for months at a time. One diver was employed and hand pumps provided him with air necessary for his underwater work.

The introduction of engine power was revolutionary. In the 1930's all vessels were motor propelled (although sails too were retained) and the mechanical pumping of air enabled the employment of two divers on each vessel. This improvement and the mobility afforded by motors brought an amazing increase in the average production per boat. Whereas in 1912, a total of 328 boats averaged 3.5 tons per boat, in 1936, a total of 51 boats averaged 12 tons per boat.

The depression years of the 1930's saw this industry struggling to exist. An all-time "low" in price (£92 per ton) was reached in 1939 and without the financial assistance provided by the Government during these years, it is probable that operations would have ceased.

The industry experienced a tremendous and disastrous setback in 1935 when a cyclone destroyed twenty luggers with a loss of 142 lives. Recovery from this misfortune had not been made when in 1936/37 a fleet of 100 Japanese pearling vessels operated off Darwin and depressed the price for pearlshell with their huge output. The following year the Japanese fleet increased by almost 100% and the low price of £92 per ton received for Broome shell in 1939 is a reflection of the result of this foreign incursion. The condition of the Australian pearlshell industry as a whole led to an enquiry in 1935 by the Commonwealth Tariff Board and as a result grants were made to each Darwin, Queensland and Western Australia. This State received £2,500 and a special grant of £5,000 was made Broome pearlers by the W.A. Government in alleviation of the loss sustained through the 1935 cyclone. Further grants of £5,300 from each the Commonwealth and W.A. Governments were made Broome pearlers in 1938-39. Since 1934 the W.A. Government had been advancing monies seasonally to pearlers to enable them to prepare for each subsequent season. Interest was charged at 5½%. This policy was adopted also by the Commonwealth Government in 1938/39 for the purposes of -

- (a) meeting difference between production costs and overseas prices;
- (b) paying of crews for 1938;
- (c) preparing luggers for 1939.

The total Commonwealth advance was £64,000.

The effect of this unfortunate period was such that the Broome pearling fleet was depleted to about 50 vessels and remained at this total up to the cessation of pearling through the outbreak of war in the Pacific in 1941.

War with Japan caused a complete cessation of pearling and a scattering of the pearling fleet. Some luggers were destroyed in North-West ports, the more serviceable were taken over by the Navy and of these many passed in post-war years to other than pearlers. The

export of pearlshell was prohibited and stocks in Australia were requisitioned for the manufacture of prismatic compass dials for supply to the Australian and Canadian armies. Gold tipped pearlshell was used as currency by the forces in New Guinea.

Labour has always been one, if not the major, problem of this industry. The employment of Asiatics brought Japanese, Chinese, Malays and Koepangers into the industry but the more energetic and more reliable Japanese gradually dominated the scene as their numbers grew to comprise 60% of the most important category - the divers. All these Asiatics were periodically recruited, entered Australia under Customs permit and were signed on with master pearlers for a specified period during which the master pearler was responsible for his men's wages and maintenance. He was required also to enter into a bond that he would hold himself responsible for his men during their stay in Australia and would guarantee their repatriation at his own cost on the expiration of their term of indenture. This system of labour recruitment functioned through intermediaries or agents domiciled in Singapore and Koepang who secured the required numbers having regard to their experience, age and physique.

The increasing control of practical operations by Japanese was the subject of a Police report in 1910 and this aroused the interest of the Commonwealth Government to the extent that in January 1911 that Government decided to discontinue permits for the indenture of foreign labour on December 31, 1912. Strong protests by the Western Australian Government were lodged together with a request for a Royal Commission to examine the industry as a whole. The Broome Pearlers' Association had meanwhile prepared a scheme for the introduction of white divers and this, following some amendment, was approved by the Commonwealth Government. Nine divers and three divers' tenders were recruited and arrived in Western Australia in February 1912 under the provisions of the Contract Immigrants Act, 1905. They were contracted to various pearlers for a period of 12 months. Remuneration was guaranteed them as follows:-

Divers	£156 per annum plus keep - Bonus £40 per ton over 2½ tons plus 2½% on pearls.
Tenders	£6 per month plus keep - Bonus £3 per ton on all shell fished by diver tendered plus 5% on pearls.

They were all ex-navy men selected by reputable submarine engineering firms (Messrs. Siebley & Co. and Messrs. C. E. Heinke & Co.) and were under the charge of William Webbor, a man with diving experience in many parts of the world. It is claimed that these men introduced at Broome what is known as "staging". Their employment during the one season they worked (1912) resulted as follows:-

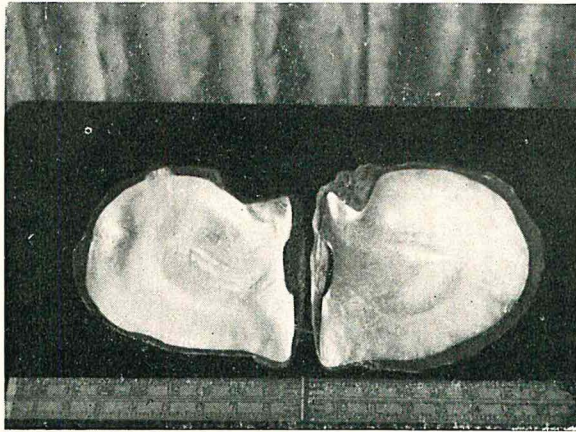
- 1 permanently paralysed
- 3 temporarily paralysed but recovered
- 1 paralysed and died (Webbor)
- 1 paralysed and died (February 1913)

None were left in the industry after 1912, the men not being attracted to the work and the pearlers being dissatisfied with results.

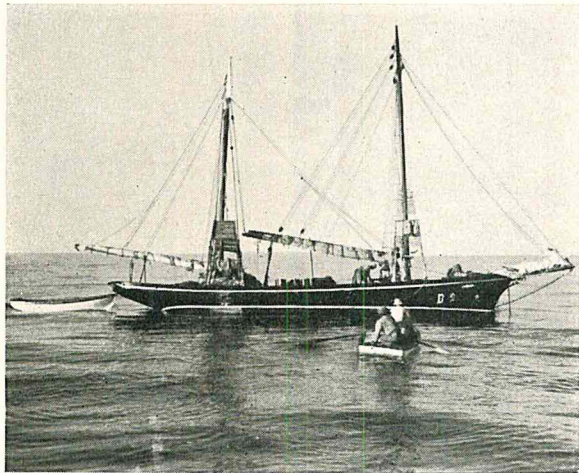
The Commonwealth Government approved an extension to 31/12/1914 of the import of coloured labour and set up in 1913 a Royal Commission to enquire into -

- (1) The class of labour engaged;
- (2) The reasons white labour had not been more generally employed;
- (3) The practicability of white labour being introduced;
- (4) The means to be adopted to encourage white labour
  - (a) wholly,
  - (b) partially.

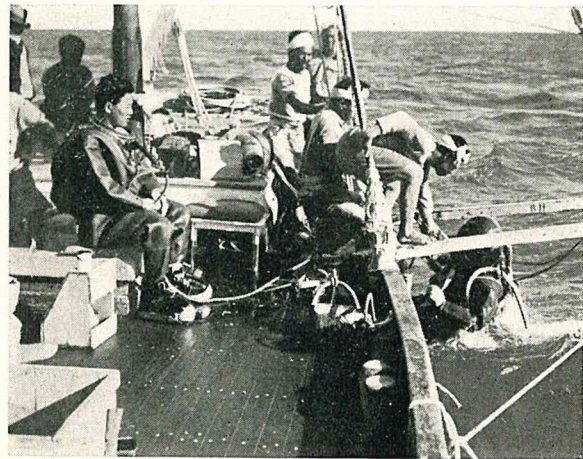
The Commission took evidence in 1913 at Sydney, Melbourne and Thursday Island and in 1916 in Western Australia after considerable delay owing to the outbreak of war. In its interim report presented in 1913 the Commission viewed as desirable a transition from coloured to white labour on national as well as industrial grounds but completely reversed its view in its final report in September 1916. The Commission then observed that "Your Commissioners have decided that diving for shell is not an occupation which our workers should be encouraged to undertake. The life is not a desirable one and the risks are great as proved by the abnormal death rate amongst divers and trial divers. The work is arduous, the hours long, the remuneration quite inadequate, living space is cramped, the food wholly



Pearlshell—Broome, W.A.



Pearling Luggar, Broome



Pearl Divers return to Luggar

preserved of its different kinds and the life incompatible with what a European is entitled to live. Social life is impossible and enjoyment out of the question".

These findings were concurred with by the Tariff Board which sat in Broome in 1935.

The consequence was that no change in labour or the methods of its recruitment have yet been made, although efforts in 1945 to re-establish the industry after World War II revived the question of the use of Asiatics. The Commonwealth Government again intimated that approval would not be given to a return to the indenture system but under pressure from W.A. approved of a further 5 year term. However in 1952 the Broome pearlery submitted a case for the import of a limited number of trained Japanese divers and finally the admission to Western Australia of 35 such men was approved. They had not arrived at the time this history was prepared.

The economics of the pearlshell fishery are naturally affected considerably by the cost of production. A carefully prepared and documented statement of production costs was submitted in 1935 by the Broome Pearlery Association to the Commonwealth Tariff Board which investigated the question of the payment of a bounty on pearlshell. It was revealed that at that time production cost per ton of shell was approximately £124/10/- whereas from 1923/24 to 1933/34 the sale price of shell averaged only £144 per ton. Between 1936 and 1941 considerable fluctuation in shell value occurred but average value for the period was only £122 per ton, and Government assistance prevented the industry collapsing. Since labour cost was shown to comprise approximately 24% of total cost it is evident that any radical change in this direction would seriously affect the margin between production cost and market price. Although today the value of pearlshell has risen very considerably compared with pre-war values, costs have increased enormously including wages cost.

The pooling of all pearlshell produced by Australia was mooted many years ago and The Pearlshell Overseas Marketing Act, 1927, was designed to stabilise the marketing of shell and to protect Australian producers' interests. The Act was to have become effective upon a majority of producers voting in favour

of the measure but apparently a poll was never taken. Subsequently in 1931 an endeavour was made to arrange production quotas for Broome, Darwin and Thursday Island but negotiations fell through as unanimity could not be achieved by the several representatives.

No successful alternative to the present method of gathering pearlshell has yet been evolved. It is probable therefore that any departure from present methods can be only of a minor character, would have little or no bearing on the conditions under which crews live and work. Thus the remarks of the Royal Commission of 1916 in this regard are very largely still applicable.

Legislation governing the pearlshell fishery originated with The Pearl Shell Fishery Regulation Act, 1873. Subsequently, amending Acts were passed in 1875, 1883, 1886 and 1889. The whole were repealed with the passing of the Pearling Act, 1912, which with some amendment is still law. This final piece of legislation embodies provisions governing the Shark Bay pearlshell fishery and repeals The Shark Bay Pearl Shell Fishery Act, 1892.

An interesting amendment to the present Act was No. 36 of 1949 which repealed section 113. This section had prohibited the sale, possession, production or dealing in cultured pearls and had been law since 1922.

### THE SHARK BAY FISHERY

#### Historical

Early in the latter half of last century the gathering of pearlshell commenced in the shallow waters of Shark Bay. Based on Freshwater Camp or Denham as the township is now known, the industry employed both aboriginal and asiatic labour, the latter comprising Chinese, Japanese, Malays and Manila men.

The most prolific area of production was Useless Inlet but operations extended throughout the shallows of all parts of Denham Sound and along the eastern shore of Peron Peninsula. Shark Bay is noted for its extensive sandy shallows which reach out into the Bay, in some places for 3 or 4 miles. During low tides a great part of these shallows are laid completely bare. The gathering of shell was therefore an easy task and when water covered the banks a hand dredge

PEARLS AND PEARLSHELL PRODUCTION - WESTERN AUSTRALIA

YEAR	BROOME					SHARK BAY					COSSACK					ONSLow							
	Boats no.	Men no.	Production			Boats no.	Men no.	Production			Boats no.	Men no.	Production			Boats no.	Men no.	Production					
			Shell tons	£	Pearls £			Shell tons	£	Pearls £			Shell tons	£	Pearls £			Shell tons	£	Pearls £	Shell tons	£	Pearls £
1900	149	1,042	541	68,580	12,009	30	80	139	993	1,482	2	33	5	590	50	15	100	58	6,950	770			
1901	178	1,326	643	88,298	26,570	31	72	131	940	1,689	16	113	47	5,612	1,470	4	23	7	300	860			
1902	227	1,551	767	133,580	40,789	23	70	151	772	2,109	13	86	43	6,983	1,932	3	18	8	1,280	250			
1903	292	2,096	790	116,049	37,974	22	54	125	634	1,736	-	-	-	-	-	22	151	77	11,406	2,538			
1904	349	2,406	1,051	116,815	33,511	21	45	164	21	2,016	7	49	30	2,705	1,103	24	180	94	9,484	4,500			
1905	302	2,140	1,067	119,188	39,853	17	43	86	518	1,821	-	-	-	-	-	-	-	-	-	-			
1906	302	2,107	1,029	120,486	49,522	25	59	110	779	2,791	8	52	22	2,260	1,155	28	178	85	8,523	5,881			
1934 <sup>31</sup>	94	669	628	75,505	3,957	18	28	91	1,463	2,317	4	24	30	3,000	100	6	45	46	5,104	150			
1935 <sup>6</sup>	81	586	567	61,618	2,888	21	41	135	2,263	3,526	4	25	36	3,000	100	6	42	68	6,800	200			
1935 <sup>9</sup>	53	419	299	37,398	843	23	37	67	1,035	1,798	4	23	38	3,241	100	6	42	31	3,388	75			
1936	62	507	622	90,055	3,367	16	25	89	699	1,713	5	32	51	5,125	100	6	42	50	5,500	20			
1937	61	536	757	112,473	2,155	10	17	50	774	1,211	5	38	50	5,000	100	6	42	60	7,200	50			
1938	61	552	873	81,767	2,407	6	9	37	518	567	5	37	50	3,022	100	6	44	51	5,100	100			
1939	60	488	687	62,738	1,952	3	6	18	183	160	3	22	45	2,470	40	6	42	57	5,000	50			
1940	60	498	643	69,197	1,454	-	-	-	-	-	2	18	32	1,901	50	2	14	25	2,805	80			
1941	55	473	589	92,795	2,257	-	-	-	-	-	-	-	-	-	-	2	14	26	3,332	102			
1946	9	86	87	52,332	-											4	31	15	6,275	410			
1947	21	218	267	167,346	775											6	43	53	28,810	519			
1948	20	198	284	145,236	1,745											8	48	51	22,720	185			
1949	19	183	264	94,536	590											6	41	48	14,600	450			
1950	24	206	334	155,365	1,635											1	10	18	9,125	-			
1951	22	201	308	167,932	1,440											1	8	13	6,500	50			
1952	19	175	292	170,382	400											1	9	10	6,500	100			

N I L

N I L

<sup>31</sup> Twelve months ended June 30, 1934  
<sup>6</sup> Twelve months ended June 30, 1935  
<sup>9</sup> Six months ended December 31, 1935

operated from a sailing vessel made the work only slightly more arduous. Dredging rarely took place in water over two fathoms.

Labour was employed on a weekly basis and operated largely without supervision. The fishery itself was not regulated by legislation until 1892 and thus the absence of official and private supervision finally resulted in disaster.

### Pearls

Pearls were the main objective in this industry until the shell itself ultimately became of such value as to supersede pearls. In contrast to the pearlshell (Pinctada margaritifera) fished by Broome luggers that of Shark Bay (Pinctada sugillata) yields pearls frequently. The pearlshell of Shark Bay is very much smaller than the Broome shell, being approximately four and a half to five inches across in the larger specimens. Thus the pearls too are small and range from mere pinhead size to about one-eighth of an inch in diameter. While the value was accordingly low compared with pearls from other places, their abundance made them a worthwhile objective. Tables of production provided herein show the relative values of shell and pearls as compared with totals of production and reveal the change of objective in later years as shell became more valuable.

The process followed in the recovery of pearls was primitive and most unhygienic. Boats delivered to base their take of shell unopened, whereupon the employer supervised the opening of the shells and the placing of the oysters in large drums called pogie pots. Herein the oysters stayed until they had so rotted that the drum contents were reduced almost to liquid and this naturally gave off an odour which became notorious. After the contents were poured away the pearls were recovered from the bottom of the pot.

### Legislation and Administration

The factors mainly responsible for the parlous state of of the industry in the 1890's when it experienced its first serious decline, were the negligible value of whell, and the absence of regulating legislation. Given such conditions and with operations in the hands of labour of the types mentioned, it could only be

expected that an all-out scramble for pearls and a total disregard of the industry's future would ensue. So depleted of shell were the banks at the end of 1891 that in March 1892 the industry was closed down by a proclamation under the recently proclaimed Shark Bay Pearl Shell Fishery Act, 1892. This proclamation forbade the gathering of shell from the main pearlshelling areas.

The appointment of John Brockman as temporary Inspector of Pearl Shell Fisheries appeared in the Government Gazette of April 6, 1892. He took up duty immediately, assisted by two boatmen named Adams and King. Early in 1893 Mr. W. Saville-Kent, an eminent naturalist visited Shark Bay at the request of the Government and investigated conditions in relation to pearling. He found the industry at a complete standstill and that many pearlery were really destitute. He observed also that the whole pearling area had been fished indiscriminately and as pearls were the main objective of the fishery, shell of any size or age had been gathered, opened and thrown aside. Only during the period 1890-92 had any attempt to market shell been initiated in an endeavour to offset overhead expenses in face of rapidly falling returns. Pearls however remained the chief objective and with the type of labour employed, illegal trafficking was rife. Indicative of the state of affairs at the time are the following remarks by Saville-Kent who said that the main pearling areas were "depleted almost to the verge of annihilation". John Brockman remarked that "Egg Island Bay, previously the best producer of the best type of shell, had been ruined by dredging".

The Act of 1892 had made provision only for the issue of a General License which permitted the holder to work anywhere in Shark Bay and to use any method. Regulations promulgated in April, 1892, prohibited the removal or possession of immature shell and enabled the Inspector to prevent collection of shell during the spawning season. Following Saville-Kent's preliminary investigation, regulations gazetted on June 8, 1893 provided for the issue of Exclusive Licenses in respect of certain areas except Useless Inlet and the banks in Hopeless Reach, these being described as "abnormally prolific areas". The use of dredges in these two areas was forbidden and the Inspector was further empowered to forbid dredging in any area whether held under Exclusive License or not, if he considered

the use of dredges detrimental to the fishery. Similarly he could forbid any work on any area for the same reason.

Most important of all perhaps was the power taken at this time to create Reserves for the purpose of maintaining stocks for re-planting denuded areas.

Following gazettal of the above provisions in June 1893 further powers were taken by regulations of 13/12/1893 and 19/6/1896 in respect of use of diving gear, calling of tenders for Exclusive Licenses and the seizing of illegal shell. All of these regulations followed recommendations by Saville-Kent which briefly summarised, were -

1. Specified areas to be set aside as Reserves
2. Subdivision of much of the area into blocks or holdings. These to be leased for a term of 14 years on condition that lessees cultivated them by protecting and planting shell.
3. The Inspector be clothed with managerial powers.

Alleviation of the dire financial position of the pearlers was recommended and approved, enabling them to operate on the Cape Banks (area No. 3) for 4 months. Only "pick-up" shelling was permitted in shallow water, dredges being confined to the deeper waters. At the expiration of the above period in October 1893, Useless Inlet was opened to "pick-up" operations only until December. Subsequently Area No. 4 (Hopeless Reach and Monkey Mia) were opened for a period of 3 months. These operations in alternate areas between 1/7/1893 and 30/9/1894 included also the replanting of shell, and really constituted a gradual re-establishment of the industry. Close supervision was exercised by the Inspector. Early in 1894 some Exclusive Licenses were granted and it is evident that the measures taken and the supervision provided, enabled the industry to thrive once more.

Thus out of the abovementioned investigation arose the system of Exclusive License which has prevailed ever since. Undoubtedly for many years the leases were worked intelligently and with concern for the future, particularly as practically the whole of the known shell-bearing area was subsequently brought

under the Exclusive License system. Until the late 1920's the industry was fairly sound but the depression of the 1930's struck it a severe blow and from then forward no effort was made to conserve stocks or in any way cultivate the leases. These were denuded of shell almost completely while continuous dredging swept them clean of all holding material until finally the banks were reduced to the same condition as had met the eye of Saville-Kent 50 years before.

Post war enquiries from persons considering the prospects of pearling in Shark Bay led to a Departmental investigation in 1947 and again in 1948. It was found that little if any recovery had occurred, and that only a systematic re-stocking of the main areas would enable the banks to regain their former condition. A few minor attempts at gathering and marketing shell were made without success, the shell being small and the colour unacceptable to any market offering.

NOTE: Since the foregoing was written two parties of Japanese operatives have arrived in Broome by air to engage in pearling. Fifteen reached Broome on March 23, 1953, and twenty on March 25. All these men had worked in Australia in pre-war years, the majority in Broome, and a number of them were interned in Australia during the war years.

THE CLEARING HOUSE

California Sardine Fishery Taken Over by State

The rapidly disappearing California sardine fishery has been taken over by the state Fish and Game Commission in a desperate move to try to save at least a portion of the sardines and mackerel which were, until recently, the basis of one of the most active industries on the coast.

The move is a direct reaction to one of the most disastrous seasons in the history of the California sardine industry. The total catch of sardines at California ports up to December 11th was only 2,508 tons as compared with 109,932 tons for the same period in 1951.

Unanimous agreements by representatives of the fishermen, cannery workers, boat owners, processors, and sportsmen on the need for immediate sardine fishery management signaled the close of a year's debate over the issue of restrictive regulations, consistently sought by the State Department of Fish and Game.

The request for such legislation was based on warnings issued by the department's specialists that the California sardine fishery was in a precarious position with poor prospects for the future.

The concern over dwindling supplies of Pacific mackerel and possible scarcity of anchovy and jack mackerel was indicated by the committee's inclusion of these fisheries also in the management proposal.

The controls will call for investment of full regulatory powers over the four species in the Fish and Game Commission, acting upon maximum-minimum season and bag-limit recommendations of the Marine Research Committee.

Commission control will be for a two-year period, starting with the 1953 season.

All commercial fishing laws are now set by the California Legislature.

("Western Fisheries", Vancouver, B.C., January 1953)

### Antarctic Whaling Opens

The Antarctic whaling season opened on January 3. Altogether 16 floating expeditions and three shore stations, with 12,500 men, are taking part. There are seven Norwegian floating expeditions this season, against ten last winter. The participation of other nations is unchanged, with three British pelagic expeditions, one South African, two Japanese, one Dutch, one Russian and one Panamanian. Of the shore stations, one is Norwegian, one British and one Argentinian.

The 16 factory ships and three shore stations are using 252 catcher boats, compared with 291 last season. The large participation last year enabled the total permitted quota of 16,000 blue whale units to be caught by March 5, but with fewer ships operating this season a longer season is likely. The quota represents an oil output of about 350,000 tons.

During the past year the price of whale oil has fallen appreciably, but recently there has been a firmer trend.

Norwegian companies recently made an advance sale of 22,500 tons to overseas buyers at £77.10s. a ton and 2,500 tons at £82.10s. a ton. Norwegian whaling companies' earnings from the sale of oil and by-products last season were £15,500,000 and in the preceding season £18,000,000, mostly from sale abroad.

("The Fishing News", London, January 17, 1953)

### Open Season for Ducks in N.S.W.

The first N.S.W. season for more than a decade!

Opening Day - February 28, closing day, May 31. Bag limit - 10 birds per day. Season covers Police Districts listed below.

For the first time in approximately 15 years, N.S.W. shooters have been granted open season on wild ducks. The season, which coincides with that of Victoria, opened on February 28, will close on the last day of May. Bag limit is 10 ducks per shooter per day.

The season is not a general one, and does not cover the entire State of N.S.W. Ducks can be taken only in the following Police Districts - Riverina (which covers the Murray River from the Snowy River to South Australia and north to the Lachlan River), Moree, Armidale, Tamworth, and Lismore.

Shooters are advised to contact police stations or other authorities in these towns before proceeding to the hunting grounds. Certain areas within Police Districts where the season is open are still bird sanctuaries; these include State Forests, Timber Reserves and Proclaimed bird and animal sanctuaries.

All species of duck except the following are still protected: Grey or "Black" duck, grey teal, chestnut teal, maned goose or "Wood" duck, hardhead or "White-eyed duck", freckled duck.

Following repeated agitation from organised field shooters, whose activities have been co-ordinated by the Australian Field Sports and Conservation Society, the Chief Secretary's Department has at last acknowledged the fact that our vast and increasing wild duck population represents a serious economic menace to rural production.

It is hoped that in future regular annual seasons, as in other states, will be declared.

N.S.W.'s ducks have been totally protected for so long that they have multiplied to an alarming degree. In the Murrumbidgee and Wakool irrigation districts they caused hundreds of thousands of pounds worth of damage in 1952, and around the turn of the year the Chief Secretary was forced to allow farmers to destroy ducks to save their properties.

Today the duck population of N.S.W. is so large that it has been reliably estimated that it would take many, many annual seasons before any impression was made on their numbers. If seasons continue to favour the ducks, they will continue to increase, in fact!

Victoria, South Australia, Westralia, Tasmania, and New Zealand have all enjoyed annual open seasons for duck for many years, and so far their shooters have failed to make any impression on the

duck population of the various states. Statistics compiled in the U.S.A. have shown conclusively that up to 50 per cent of the total game bird population can be harvested each year without upsetting the balance of nature.

If hunters act wisely this season, and don't indulge in wanton slaughter, which would bring discredit on all shooters alike, there is no reason why we shouldn't justifiably expect another season in 1954 and in 1955 . . . .

("Outdoors and Fishing", Sydney, March, 1953)

### Fish Culture

THE DIVISION OF FISHERIES is undertaking experiments in fish culture at Port Hacking in New South Wales, and Moreton Bay in Queensland.

Although the techniques have been under notice in Australia for some years, no basic investigation has previously been made on the culture of our native fish. Fish culture undertaken on an adequate scale could result in a profitable primary industry and a ready source of palatable protein food.

Fish will be raised as livestock under controlled conditions in lakes, ponds, lagoons, and estuaries by influencing the aquatic environment to assure that a maximum number reach a desirable size each year.

Experimental areas are being sealed off from the main estuaries. Additions of fertilizers to the enclosed waters will then augment the growth of aquatic plant life, thus stimulating a new level of fish population in balance with increased food supplies.

Stocking trials will then be made by introduction from nursery ponds of both forage and predatory fish types, and basic information obtained to show whether a large number of similar lagoons can profitably be converted for fish culture to increase the existing yield of mullet, whiting, bream, and blackfish.

The experiments are being extended to freshwater lakes in Tasmania and the programme will yield information for establishment of both an estuarine fish industry and "fish farming" techniques for the man on the land.

("C.S.I.R.O. Digest of Current Activities", Melbourne, No. 27, March 1953.)