



FISHERIES DEPARTMENT, WESTERN AUSTRALIA

MONTHLY SERVICE BULLETIN

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June 1, 1955



Mr. A. V. Green

VALE BERT GREEN

On May 28 Mr. A.V. Green died at the Royal Perth Hospital and was interred in the Karrakatta Cemetery on May 31. The Superintendent, accompanied by Messrs Saville, Piesse, Bramley, Munro, Davidson and Murray, were present to pay their last respects.

Mr. Green was born at Port Adelaide, South Australia, on May 18, 1881, and came to Albany with his parents at a very early age, his father being a member of the complement of the well-known coastal steamer Rob Roy. Before entering the service of the department young Green worked as a fireman on the steam tug Dunskey under Captain W. Douglas, joining her very shortly after the tug succoured the crew of the City of York when that ship went aground on the north shore of Rottnest Island. Later he joined the three-masted schooner Iris, trading between Albany and Port Adelaide, the master being Captain J. Davidson, father of Mr. W. Davidson, now inspector at Fremantle.

In October, 1903, Mr. Green joined the staff of the Fisheries Department, then some five years old, under the late Chief Inspector C.F. Gale. The department was housed in two rooms on the second floor of a building the site of which is now occupied by the King Edward Hotel at the corner of Pier and Hay Streets. In the intervening years Mr. Green saw the department change its quarters some seven times, the last transfer being to our present locale in Adelaide Terrace a few days before he retired.

Mr. Green joined the department as engineer of the steamboat Waratah, and soon afterwards was appointed assistant fisheries inspector as well. His initial duty was to accompany Inspector A. Abjornssen to Safety Bay to regulate the annual snapper fishery at that centre. Those were the days when during the snapper schooling season from October to December fishing was permitted for only three hours each day. The fleet of waiting boats began hooking when the departmental officers hoisted a flag at 5 a.m. and had to stop when the flag was hauled down at 8 o'clock. On the last day of the limited fishing season a gun was fired as a notification that the bay was again open for unrestricted fishing.

When the Waratah was transferred to the Police Department in 1906, seagoing operations were largely eliminated and Inspector Green entered on a long period of patrol work in inshore waters and the supervision of the metropolitan fish sales. In those early days fish was sold at the Fremantle Fish Markets jetty site and at the foot of Mill Street in Perth. Later the Perth sales were transferred to Paddy's Market in Roe Street, and later still to the markets at the foot of William Street, near the Horseshoe Bridge.

The patrol work, carried out on foot and in rowing boats, was far more prosaic than the average person commonly regards such activity. It is far less exciting than the comparable patrols of American fish wardens, who carry arms and not infrequently use them against determined poachers, sometimes fatal casualties resulting on both sides. Mr. Green recalls, however, that in the most serious fracas in which he figured a poacher attacked him with an oar - and this unwonted assault was probably due to his

being mistaken for an honorary inspector, against whom, for some reason, fishermen seemed to have a particular animus. Mr. Green never encountered any gunplay on his patrols!

Patrol work of a different character, and calling for unlimited resourcefulness and ingenuity, lay in the field of game conservation. Here Inspector Green and his colleagues had to contend with poachers who played for big stakes in attempting to run parcels of illegally-taken possum skins through the departmental net - and often succeeded. Mr. Green said that the motor cycle he was provided with for his patrol was quite inadequate for the chase of poachers who often conveyed their booty in fast modern cars and who, once they sighted him, remained only a cloud of dust ahead. Though some parcels of skins were seized, the department was never able effectively to break up the illegal traffic in skins, and it could be said that the bulk of the law-breakers were able to make a clean getaway. The methods used in transshipping the skins were often the last word in ingenuity and were constantly varied to elude the inspecting officers. In one instance parcels of skins were covered with tallow to make them waterproof and hidden in an iron tank.

Among Inspector Green's most arduous field hunts of skin poachers was one which took him to the Donnelly River district many years ago, in country which is still among the wildest in the South-West. In company with a police constable he followed the trail, during a close season, to a lonely bush camp, where they found a woman and two children. The husband, she naively informed the visitors, was away on his possum rounds. When he came in and was informed of their identity he admitted he had a few skins and produced two dozen for inspection. A search, however, revealed 368 skins in a tent and 56 more pegged out on trees nearby. These were officially seized, loaded on pack horses and the tortuous trail through the Donnelly swamps was begun at dusk. During the night the party missed its tracks, but the leading horse, eventually given its head, led them to the base camp. On another occasion, Inspector Green was instrumental in seizing 528 possum skins from a well-known South-West identity who had managed to get them as far as the ship, secreted between bales of kangaroo skins.

The variety of persons who engaged in the illegal possum trafficking was amazing. In private life they ranged from Government employees on holidays to itinerant country workers with many opportunities for illicit snaring.

During the first world war, when the short-lived State fish shops were operating, Mr. Green was despatched to Shark Bay in charge of a party engaged in fishing to supply the shops. The men were employed on the share system instead of wages and the unit comprised the boat Una as carrier, the Torrens as storeship, three nets boats, and a motor launch with six men as fishing crew. Later in the war he joined the Royal Australian Navy and served as a signalman at Fremantle, and on the patrol boats based there.

As the Fisheries Department has always actively associated itself with marine biological investigations in the State, Mr. Green found himself in close association with the scientists in the different expeditions which worked the local waters, from the Hamburg Museum Expedition of 1905 onwards. He was also associated with the investigations of Professor W.J. Dakin and Professor G.E. Nicholls, of the University of Western Australia, with Mr. L. Glauert of the W.A. Museum, and with Dr. D.L. Serventy's investigations into the feeding habits of cormorants.

When he retired on December 31, 1945, he terminated over 42 years of service with the State Fisheries and Game Department, the longest active career of any individual in the history of the Department.

After his retirement Mr. Green was closely associated with the Licensed Fishermen's Association of W.A., which is mainly comprised of those engaged in fishing in the waters of the Swan and Canning Rivers, and for some years up to the date of his death was its president.

STAFF NOTES

On May 9, Senior Inspector J.E. Munro and Technical Officer L.G. Smith together visited Denmark. Mr. Smith advanced a few days his regular visit to

Denmark on the estuarine research programme hoping to tag snapper which were reported to be plentiful in the new cut. Unfortunately what snapper had not been fished out had apparently moved back into the estuary and none was secured. Mr. Munro investigated reports of illegal netting in the cut and other closed waters and the sale of fish by amateurs.

Inspector R.J. Baird and Cadet Inspector M.J. Simpson sailed on the p.v. "Garbo" for the Abrolhos on May 10. In the early hours of Thursday morning, May 26, the "Garbo" dragged her anchor in Geraldton harbour during a north-westerly gale and damaged herself on the fishermen's landing on the western end of the wharf.

Technical Officer J. Traynor was farewelled at an informal function at Head Office on May 27. Mr. Traynor ceased duty that day to commence six months' long service leave. He intends to visit many places in England and will renew friendships with World War I comrades on the Continent. While in England he will call at the British Museum, the Nature Conservancy, and the Fauna Preservation Society of London, and hopes to spend a week or so at the Severn Wildfowl Trust at the mouth of the Severn on the east coast. Subject to suitable arrangements being made, he will accompany Dr. D.L. Serventy on a visit to a banding station in the Hebrides. Mr. Traynor will return to Western Australia on December 15.

Mr. J.L. Gallop has been promoted to Inspector, Grade II, as from March 23, 1955. He resumed duty in charge of the Bunbury district after annual leave on May 25.

Mr. B.K. Bowen was given a farewell on May 20 prior to his taking annual leave and his marriage on May 21. His bride-to-be was also present at the farewell, at which the Superintendent on behalf of the staff presented the young couple with a Ranleigh tray and a water set. Mr. Bowen expressed his delight with the gifts and their appreciation of the kind generosity of his fellow officers.

Temporary Assistant Inspector G. Konow has tendered his resignation from the service as from June 17, 1955.

Assistant Inspector T.B. Baines has been selected to act as Inspector at Point Cloates when the whaling season commences there later this month.

Fauna warden G.C. Jeffery visited Bunbury, Capel, and Busselton areas from May 2 to 5.

Technical Officer L.G. Smith left for Geraldton on May 31. He hopes to tag mullet internally in the Greenough River, which is expected to break through to the sea very shortly. An ideal opportunity presents itself to check on the migration of this species, if they can be tagged before the river breaks through to the sea.

Mr. G.H. Lyon will commence duty as a Temporary Assistant Inspector on June 1, to fill the vacancy caused by the resignation last month of Assistant Inspector V.J. Sinclair.

Inspector H.J. Murray commenced three weeks' annual leave on May 30. Inspector A.K. Melsom will be in charge of the Mandurah district during Mr. Murray's absence.

DISTRICT INSPECTORS' MID-YEAR CONFERENCE

Arrangements have been made to hold the conference this year at Bunbury commencing June 15. During Inspector Green's absence from Albany, Inspector G.C. Jeffery will be stationed in that district to maintain the necessary oversight of whaling activities.

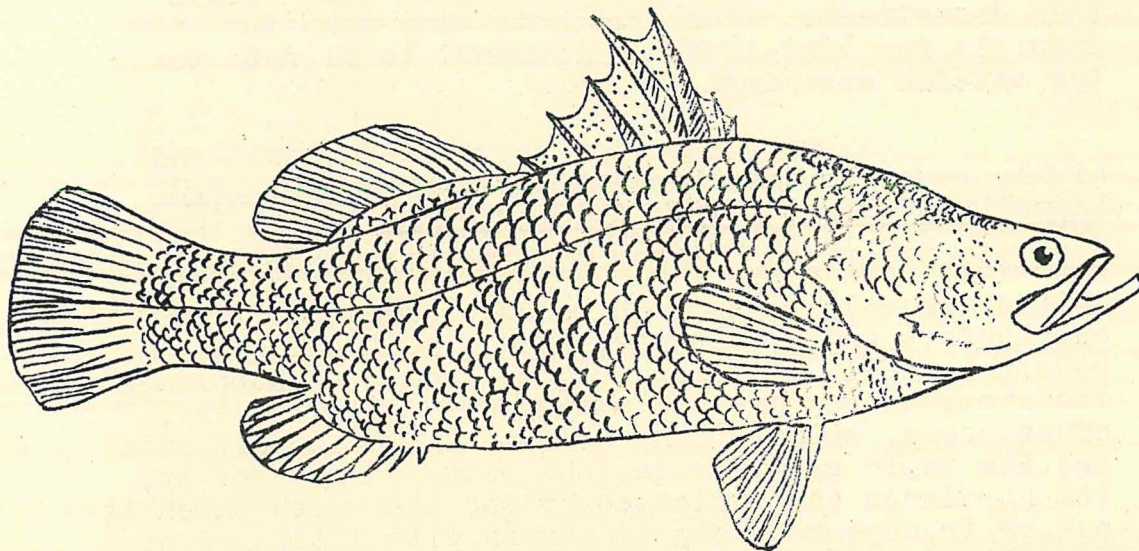
PERSONAL

A visitor to Head Office during May was Mr. L.A. St. Leger, Secretary, Fisheries Division, Department of Agriculture, Hobart, Tasmania, who had come to Western Australia to be present at his daughter's wedding. Mr. St. Leger during his stay toured the South-West and Albany, and spent several hours discussing with the Superintendent fishery developments and other subjects of mutual interest.

THE BARRAMUNDI

The Division of Fisheries, C.S.I.R.O., is investigating the barramundi as part of its programme of research on the fisheries of Queensland. The name of the fish, which is regarded by many as the choicest of all Australian food fishes, was formerly applied by Queensland natives to any good eating, large-sized coastal river fish. However, it is today restricted to Lates calcarifer, sometimes also known as the Palmer, or Giant Perch.

The barramundi normally inhabits muddy, discoloured waters, but it also occurs quite freely in onshore waters close to river mouths. The best hauls are often made in shallow, turbid coastal waters at dead low tide. A tropical species, the barramundi is found in abundance in the North-West of this State. Fisherman Dean M. Brown, who operates a fishing unit incorporating a floating refrigeration plant in King Sound (Derby), is hopeful of developing a market in Perth for quick-frozen fillets of this fish. Trial shipments last year were given a most encouraging reception.



BARRAMUNDI, (Lates calcarifer)

Mr. Brown speaking to the Superintendent on his last visit to Perth said the largest barramundi his crew had caught was in the vicinity of 60 lb. However, the record for Queensland, where of course it has been fished commercially for very many years, is twice that. Even this is small compared with a specimen caught in the Bay of Bengal. This is said to have tipped the scales at 580 lb.

The barramundi is an exceedingly powerful fish which packs a punch like the kick of a mule. It is extremely hard on nets, more so even than sharks or other fish of similar size. For that reason Mr. Brown relies largely on a kylie or a harpoon, either of which in the hands of his crew is a most effective weapon.

Spawning is said to occur during late spring and early summer, in coastal areas. It appears to take place near river mouths on shallow mud flats where at times as much as six inches of mud overlies the sand. After spawning the mature fish stay in outside waters. The recently-hatched juveniles, on the other hand, make their way upstream to fresh water for food and protection. Here they remain until the freshets of the next "wet" drive them downstream. These freshets also make it possible for land-locked barramundi to migrate to the sea for spawning.

"By virtue of its very rapid growth and highly regarded edible qualities", says C.S.I.R.O. Digest of Current Activities for March, 1955, to which we are indebted for much of the foregoing material, "the barra would appear to be a fish ideally suited for culture in fish ponds. However, it is carnivorous and predaceous, and in most cases a constant supply of food would be needed to supplement its diet, which consists mainly of small fish fry, crustaceans, mullet, bony bream. On the credit side are its rapid growth rate, the ready market for it, its hardiness (as indicated by the ease with which it can be transported long distances with little or no mortality), its easy acclimatisation to fresh, brackish or salt water, and its resistance to parasites and disease".

(The drawing from which the foregoing plate was made is the work of Mr. Gilbert P. Whitley, Curator of Fishes at the Australian Museum, Sydney, a very good friend of the Department. We are deeply grateful to Mr. Whitley).

ROTTNEST BIOLOGICAL STATION COMMITTEE

Under the chairmanship of the Superintendent (Mr. Fraser), a meeting of this Committee was held at Rottnest Island on Sunday, May 8. Other members present were Professor H. Waring, Dr. K. Sheard and Mr. T. Sten. The Secretary (Mr. B.K. Bowen) was also in attendance.

A report submitted by Professor Waring indicated that the Department of Zoology of the University was continuing its ecological work in relation to the quokka, although the disastrous fire earlier in the year had set the work back considerably. He said an orthodox population count of quokkas had been started to find out whether the animals moved about much, what was the growth rate of the young, and whether the adults migrated to any extent. In 1954 a population crash had occurred in the vicinity of Bagdad Lake. His research staff had analysed the causes of the crash. Water shortage, it was found, had caused dehydration of the animals. This had led to their picking up hook worm, which caused anaemia. It had also been learned that quokkas were ruminants, and that the protein available in what vegetation had remained by the end of a long, dry summer could not be assimilated by the digestive system. Death had been due in fact to protein deficiency.

C.S.I.R.O. Wildlife Survey Section were making an accurate census of the population of quokkas. The census would eventually embrace all animals in the area west of Bagdad and Serpentine Lakes. Meantime Zoology Department staff were undertaking a rough census on the southern part of the Island. In the laboratory the blood sugars and the amount of nitrogen passing through the quokkas were being measured. It was hoped that this work would provide an answer to the question of why the quokka population was such a fluctuating one. Feeding experiments were also in

train to find out exactly what was the minimum requirement for their existence.

Dr. Sheard reported on the routine ruff and crayfish work which was being undertaken at Rottnest by personnel of the C.S.I.R.O. Division of Fisheries. He said that in company with the Conservator of Forests and one of the latter's officers he had visited the Island a short time previously, and the Conservator had now submitted a report incorporating re-afforestation proposals. The only trees he had recommended should be extensively used were tea-tree, pine and tuart.

Mr. Sten commented on his Board's views concerning beautification of the Island and restoration of the habitat.

ABROLHOS CRAYFISHERY

The catch figures for March and April, 1955, show an overall improvement over the corresponding period of 1954 of 37.9%. The greatest improvement is in the Pelsart (Southern) Group, where this year's catch has increased 105.3% compared with that of 1954.

One of the main reasons for the increase is the introduction of bigger vessels with greater range, thus permitting the opening up of deep-water grounds which were previously unattainable. Improvement in fishing techniques is also in part responsible for the better catch.

Other factors have been the continued good weather which has prevailed this season. To a lesser degree the increased number of fishermen operating has had an effect on the catch.

One very pleasing feature is the fact that in the Abrolhos proper, i.e., in the shallow reef areas and atolls of the four island groups, production has remained steady during 1953, 1954 and 1955. In fact, there has been a slight increase in catch, which seems to indicate that the crayfish stocks have now settled down to a state of stability. This suggests

that the Department's conservation policy, based largely on the results of C.S.I.R.O. research, was founded on sound principles. Although in earlier years it was fairly generally believed that our restrictions were unduly harsh, the consensus of opinion among fishermen is that our management policy is something of which we may well be proud.

The tables on page 89 give the 1954 production figures as well as those for 1955.

PROTECTION OF CRABS

Numbers 15A and 15B of the Fisheries Act Regulations have been repealed and new Regulations 15A and 15B substituted therefor. The old regulations, it will be remembered, prohibited the taking from the Swan River of female crabs for sale from January 1 to March 31 in each year and set out legal methods of netting (15B). The prohibition on the taking of female crabs for sale during the first three months of each year has now been extended to all waters of the State, and new rules have been made in regard to the use of crab nets in the Swan and Canning Rivers. The new regulations, which were gazetted on May 3, are as follows :-

15A. No person shall, for the purpose of sale, take any female crabs from any West Australian waters during the months of January, February and March in any year.

15B. No person shall, for the purpose of taking crabs, use or cause to be used or permit to be used in the waters of the Swan River or the Canning River or their tributaries any net exceeding seventy yards in length or more than eight (8) nets at any one time. No net used for the taking of crabs shall be set within a distance less than fifty yards of any other crab net.

WILSON'S INLET

A letter was sent last month by the Denmark Road Board to the Minister for Fisheries (Mr. Kelly)

protesting against alleged netting in the newly excavated channel. The position was investigated by Senior Inspector J.E. Munro from May 9 to 13.

In his reply to the Board Mr. Kelly said that he was more concerned with the waste which had occurred when anglers caught more snapper than they could possibly use themselves and the sale by unlicensed persons of large quantities of fish.

He drew attention to a statement which he had issued to the press on the subject and asked the Board to give it wide publicity.

SWORDFISH IDENTIFIED

Advice is to hand from Mr. G.P. Whitley Curator of Fishes of the Australian Museum, Sydney, that the marlin found dead in the surf just north of City Beach by Mr. F. Wells on March 30, was a Broadbill Swordfish, Xiphias gladius Linn. Mr. Whitley said that this species is much sought after, but vainly, by our big game fishermen. He went on to say that this record was another interesting occurrence of the Broadbill in Australian waters.

Other Western Australian localities from which specimens have been recorded are Quindalup, Hopetoun and Geraldton.

MURCHISON RIVER ROAD

Last February Inspector S.W. Bowler drew attention to the poor condition of the road from Northampton to the mouth of the Murchison River, which is widely used by fishermen to bring their catches to Geraldton. Representations were made by the Department to the Commissioner of Main Roads, who had an engineer enquire into the matter. Advice was received last month from the Commissioner that the question of improving the road had received sympathetic attention, and an amount of \$4,000 would be set aside on the 1954-55 works programme. This amount would allow 6 miles of new road to be constructed to run due east from the mouth of the Murchison River, to link up with the road from Northampton to Murchison House Station.

ABROLHOS CRAYFISH CATCH, 1954/1955

GROUP	1954			1955			Increase %
	March*	April	Total	March*	April	Total	
	lb.	lb.	lb.	lb.	lb.	lb.	
North Island	39,785	72,343	112,128	57,691	104,424	162,115	44.5
Wallabi	120,382	194,526	314,908	168,872	251,762	420,634	33.5
Easter	156,468	279,877	436,345	204,917	268,721	473,638	8.5
Pelsart	72,230	127,689	199,919	182,384	228,087	410,471	105.3
TOTALS ...	388,865	674,435	1,063,300	613,864	852,994	1,466,858	37.9

CATCH PER MAN 1954/1955

GROUP	No. of Men				Catch per Man			
	1954		1955		1954		1955	
	March	April	March	April	March*	April	March*	April
					lb.	lb.	lb.	lb.
North Island	15	13	20	20	2,652	5,565	2,884	5,221
Wallabi	43	39	40	41	2,799	4,987	4,222	6,140
Easter	48	49	48	48	3,259	5,712	4,269	5,600
Pelsart	26	25	43	49	2,778	5,107	4,241	4,654
Abrolhos	132	126	151	158	2,946	5,352	4,065	5,398

* As season opened on March 15, only 17 days' fishing was possible in March

CRAYFISHING - CONTROL OF THE SETTING OF POTS

A complaint was received late in April from a Fremantle crayfisherman in which he expressed concern at the way in which other crayfishermen's pots interfered with his. He said that experienced men were hampered by others following them to good grounds and setting their pots close by. It was suggested that if something were not done to control the manner and location in which craypots were set, serious trouble might develop in the industry.

After considering a departmental report on the subject, the Minister for Fisheries (Mr. Kelly) decided to refer the question to the Fishermen's Advisory Committee for investigation and subsequent recommendation.

TROUT DISTRIBUTION

Technical Officer J.S. Simpson, assisted by Technical Officer J. Traynor, successfully transported further deliveries of advanced fingerling trout to Acclimatisation Societies during April and May.

The totals delivered were as follows :-

Harvey Society	4,000
Serpentine "	7,000
Blackwood "	10,000
Murray "	2,750

TOTAL .. 23,750

Mr. Simpson said that the only trouble experienced with the new transport unit was the tendency of the motor to overheat.

A load of fingerlings to be delivered to the Murray Society in July will complete the distribution of last year's hatchings.

FISHING BOATS WRECKED AND DAMAGED

A violent nor-wester, which hit the Geraldton area on May 25, caused serious damage to a number of craft. Apart from the harm done to the p.v. "Garbo" (mentioned earlier), Inspector S.W. Bowler reports a further three fishing boats suffered as a result of the blow.

The "Fair Maid", a 30' sloop owned by Mr. A.O. Gaze, also dragged her anchor in the harbour and was extensively damaged by being buffeted against the wharf. It is estimated that the cost of her repairs will be about £400. Several smaller craft in the harbour were also damaged or sunk, but fortunately no other fishing boats suffered.

The "Sea Foam," a 19' auxiliary fishing boat, owned by Mr. J. Casson of Geraldton and valued at £400, was blown ashore on the town beach on the afternoon of May 26. She is said to have suffered severe damage to her hull.

The "Beverley-Dawne," owned and operated by Mr. G. Keenan, of Geraldton, was driven ashore at Drummond's Cove on the evening of May 25, and at first was only slightly damaged. However, the pounding she received on the beach caused her to break up and she is now believed to be a total loss. The "Beverley-Dawne" was a 22' launch and was valued at about £300.

The 36' auxiliary fishing boat "Winetta", owned and operated by Mr. G. Raffa, was sunk at the Abrolhos Islands on May 27. Registered at Fremantle, she was crayfishing at the Islands and was under way between Rat and Wallabi Islands, when she struck a submerged baulk of timber which seriously damaged the hull under the water line and she sank quickly. Mr. Raffa and the other two crew members were able to get aboard their dinghy and after a very hazardous trip lasting some 20 hours they reached Beacon Island in the Wallabi Group. They were taken back to Geraldton by another fishing boat on May 29. It is understood that the "Winetta" was not insured and her loss is a very serious blow to Mr. Raffa, who has fished this coast for the past 30 years.

FAUNA INSPECTION

The Fauna Warden, Mr. G.C. Jeffery, carried out an inspection of the Bunbury - Capel - Busselton districts, from May 2 - 5. Many Road Board and Farmers' Union Secretaries, police officers and honorary wardens were interviewed, but he received very few complaints. Land owners seemed very well satisfied with the existing licensing provisions for dealing with trouble from kangaroos, and an open season for this species is apparently not required.

Several farmers did complain, however, of bronzewing pigeons being destructive at seeding time in the clover paddocks, and have requested an open season. Other reports have been received on this matter, and it is said that bronzewings have a decided preference for albino clover seed and cause considerable damage. The Fauna Protection Advisory Committee will give consideration to the request for an open season at its next meeting.

Up to the time of Mr. Jeffery's visit very little rain had fallen in the district compared with the floods elsewhere. Ducks and other water-fowl were scarce, the majority having left after the February rains.

WESTERN AUSTRALIA'S WHALING INDUSTRY

The State might possibly be in danger of losing an industry now worth nearly £A1,000,000 annually if some brake were not applied to the taking of humpback whales on the Western Australian coast, said the Minister for Fisheries (Mr. Kelly) recently.

He was commenting on the action of the Commonwealth Government in reducing the annual quota for this State from 1320 to 1120 whales.

Humpback whales which visited the coast during the winter spent the summer in the Antarctic seas in an area almost due south of Cape Leeuwin, said Mr. Kelly. Hunting for humpbacks was carried on in the Antarctic as well as on our coasts, so it was

a relatively simple matter to follow changes in the humpback population by analysing catch figures for both the Antarctic and eastern Indian Ocean waters. This had been done.

Research over recent years had shown that there had been changes within the group of humpbacks upon which Western Australian whaling concerns operated. The main points arising from this research and the catch analysis were -

- * Males have always predominated in the catches in this State, but the take of females has risen from 29% of the total in 1949 to 47% in 1954;
- * The size of both males and females in the catches in the Antarctic and local waters has declined. In 1949 the average length of males taken in Western Australian waters was 40 ft. 4 in., while in 1954 it had been reduced to 38 ft. 9 in. The females dropped from 41 ft. 5 in. in 1949 to 40 ft. 6 in. in 1954. In the Antarctic the equivalents were 39 ft. 6 in. (1949/50) and 38 ft. 10 in. (1953/54) for males and 41 ft. 2 in. (1949/50) and 39 ft. 9 in. (1953/54) for females.
- * Some of the whales taken, although in excess of the minimum legal length fixed by international agreement (35 ft.), were immature, i.e., they were too young to breed. It probably does not matter if some immatures are killed, provided the escapement is sufficient to maintain the brood stocks at a sufficiently high level. The catch figures have shown, however, that more and more immature whales have been taken each year in both the Antarctic and Western Australia.

"These facts," concluded Mr. Kelly "are such as to give some concern, not only to the Federal and State Governments, but also to the whaling companies themselves. The trends indicated are highly unfavourable towards the maintenance of the stocks, and if unchecked could constitute a serious threat to the industry."

OIL POLLUTION OF THE SEA

In view of the many complaints which have been made concerning pollution of the sea and nearby beaches following the commencement of production at the Kwinana oil refinery, it is particularly interesting to note the measures being taken to put an end to this serious menace overseas. Britain has led the way in anti-pollution activities for some years, and complaints of oil pollution still occurring there cannot but cause grave concern.

A correspondent writing recently to the "Fishing News", London, complained that ever since a new refinery was opened on the lower reaches of the Medway, there had been a constant surface of crude and paraffin oil on the water around the refinery. The correspondent, a shrimp fisherman, said that at times his nets had come to the surface covered in filthy crude oil which contaminated the catch and fouled the nets and gear. Some or all of the catch had to be dumped and the nets thoroughly washed. Similarly, fishermen elsewhere feared their catches might be heavily diminished as the result of oil being jettisoned by tankers. In addition to fouling many miles of beaches and killing thousands of sea and migratory birds, the oil was believed to be destroying young fish, and especially fish spawn.

It was to find safeguards against such pollution that the British Government first set up a special committee late in 1952. The report of the committee was used as a basis by the International Convention on Pollution of the Sea by Oil which met in London in 1954. Delegates from thirty-two countries (including Australia) attended together with observers from another ten countries, as well as representatives of the United Nations and Food and Agriculture Organizations. The convention adopted eight resolutions which have since been submitted to the governments and other bodies concerned for specific action.

Briefly the resolutions were :-

- (1) The complete avoidance as soon as practicable of discharge of persistent oils into the sea.
- (2) The application of the principles of the Convention so far as is reasonable and practicable

to the ships to which the Convention does not apply.

(3) The encouragement of development and installation of efficient oily-water separators for use in ships and the preparation of a performance specification for such separators.

(4) The provision of facilities for the reception of oil residues at repair ports and at oil-loading terminals.

(5) The preparation of manuals of guidance for the avoidance of oil pollution.

(6) Interim measures pending the coming into force of the Convention.

(7) The creation of national committees on oil pollution.

(8) The collection and dissemination by the appropriate organ of United Nations of technical information about oil pollution.

The United Kingdom was quick to give legislative effect to these decisions, the Oil in Navigable Waters Act being passed in May, 1955. The resolutions of the Convention were embodied in the Act, together with the necessary penal and machinery clauses. Some time prior to the passing of this legislation, however, many British oil companies had already taken steps to prevent pollution. The Kent Oil Refinery, owned by the British Petroleum Company, Ltd., provided very full facilities for the reception of all oily liquids. Each tanker master is handed personally a copy of a warning letter from the general manager of the refinery, and the refinery officials follow this up by doing their best to ensure that vessels pump ashore all oily or suspected water.

The Esso Petroleum Company, Ltd., has also declared itself as being alive to its responsibilities to prevent pollution. At its Fawley refinery the company has spent approximately £1,000,000 on anti-pollution equipment, which includes -

Oil water separators : All water used for cooling during the refining process has to pass through separators before discharge into the sea.

Ballast water tanks : Two ballast water tanks are situated near the marine terminal for the reception of oily water discharged from ships arriving in ballast.

In addition, the following precautionary measures are in force -

1. Emergency stops at each jetty, which automatically stop all pumps in the loading pumphouse;
2. A "spill boom" at the marine terminal ready for the immediate corralling of any accidental oil spillage;
3. Draining tanks at each jetty, enabling hoses and/or manifolds to be cleared of oil;
4. An extra officer in vessels trading on the coast to assist in preventing oil spillages. Four turn-around supervisors are specially employed to assist ships' personnel in preventing oil spillage;
5. Scuppers and openings are plugged to prevent oil going overside. On-the-spot investigations of any spillages are carried out;
6. A berth is made available for the reception of oily slops from vessels proceeding to repair ports. This facility has been extended to vessels other than those operated by the Esso Petroleum Company.
7. A slop barge is employed for slop disposal when it is inconvenient to berth a vessel. This barge discharges into the refinery ballast tanks;
8. Those recommendations in the Falkner Report on Oil Pollution which can be carried out at once, without waiting for legislation, have been issued as strict instructions to all Esso ships.

As mentioned in an earlier issue of this Bulletin, the Western Australian Government has set up

the Maritime Pollution Committee, of which the Superintendent is a member. At a meeting held towards the end of May the position at Kwinana, which comes under the jurisdiction of the Fremantle Harbour Trust, was discussed fully, and steps which will need to be instituted to combat pollution there were considered.

The desire was expressed that an endeavour be made to secure information concerning oil pollution at other ports, particularly during or after visits by tankers or oil-burners. Inspectors at Albany, Bunbury and Geraldton are requested to keep a watch for any oil slick in the vicinity of such vessels and report promptly on the occurrence. Samples of polluted water should be obtained and sent to Head Office for analysis.

TASMANIA'S CRAYFISHERIES

The crayfish season, which comprises principally the summer months, is now tapering off and is expected to finish this month. It has not been as good as last year, according to "Monthly Summary of Australian Conditions," issued by the National Bank of Australasia, Ltd., under date May 13, due mainly to the more popular areas being denuded of fish. However, next year areas will be extended by the use of larger boats with better equipment. The use of echo sounders will, it is said, increase efficiency and, although the average catch may not increase, they will enable fishermen to maintain present figures more economically.

FAUNA PROTECTION ADVISORY COMMITTEE

A meeting of the above committee will be held at the Department's board room on June 7. The principal items on the agenda for discussion are the establishment and control of sanctuaries and proposed amendments to the regulations made under the Fauna Protection Act.

EXPORT POLICY TO CHANGE ?

An endeavour is being made by a number of frozen craytail exporters to interest the United States market in whole cooked crayfish. When the Knutsen ship "Gjertrud Bakke" sailed from Fremantle for American Pacific ports on May 6, she carried nearly 1,800 cases of this commodity. Part of the shipment is destined for New York and Chicago, where they will go by train from Seattle.

It is confidently anticipated that the Western Australian product will compete more than favourably with the Mexican pack of whole cooked fish, which at present controls the American market, and constitute a new dollar earner for this State.

The following table gives a list of the exporting firms and the number of cases of crays forwarded by each -

Exporter	40-lb. cases	Net Weight
	No.	lb.
Anchorage Butchers Pty. Ltd.	200	8,000
Genex Pty. Ltd.	100*	3,000
Russell Pty. Ltd.	50	2,000
Fremantle Fishermen's Co-op. Ltd.	847	33,880
Craig Mostyn & Co. Pty. Ltd.	592	23,680
Totals	1,789	70,560

* Genex exported in 30-lb. cases.

It is intended to follow this initial shipment with monthly consignments by the new direct Knutsen service between Fremantle and U.S. west coast ports. A sample of whole cooked crayfish has also been sent to Denmark, and further samples will in the near future be despatched to Italy.

THE CLEARING HOUSE

Fish-Tracking Device Employed by Scientists

The U.S. Fish and Wildlife Service of Fishery Biology is using the latest engineering developments in underwater sonic devices to study the behaviour of adult salmon in their upstream migration. Production models of the Sea-Scanar, engineered and developed by the Marine Division of Minneapolis Honeywell Company, have been modified to aid Service biologists in the observation of fish movements under a variety of hydraulic conditions.

An automatic tracking receiver and a small signal generator have been developed to enable the biologists to track closely the movements of an individual salmon. The signal generator is attached to the fish and the receiver automatically "homes" to the signal. In this way, the position of the fish in the stream or fishway is recorded on a calibrated cathode ray tube. The tracking receiver is mounted in an 18-foot work boat.

With the use of this equipment the rate, depth and route of migration of adult salmon, plus their reaction to obstacles along the route of migration can be determined.

Observations of salmon behaviour will be made in the vicinity of fishway entrances and collection systems of dams, fishway exits and in the fishways.

("Pacific Fisherman" Portland April, 1955)

Attack on Poisonous "Red Tide" Builds Up

With both Federal and State monies and scientists now available to fight the toxic "Red Tide" which has, in the past, killed so many millions of fish in the Gulf of Mexico, it is believed the problem of besting the micro-organism causing the destruction may one day be solved.

Chief Albert C. Collier, of the Gulf Fisheries Investigations for the U.S. Fish and Wildlife Service,

predicted that: "within three years we will either find a definite answer to the problem of controlling the "Red Tide" and make our recommendations, or we will know the problem is insoluble and get out."

He added, however, that he expects the problem will be licked - probably in less than three years.

He said, also, that present research aims to discover a way to kill the "Red Tide" organism - the *Gymnodinium brevis* - before it has a chance to develop and become lethal over a large water area.

It was discovered some time ago that copper sulphate will kill the microbe, but the feasibility of using the chemical over extensive areas has been questioned.

Recently a section of infected water about two miles long and a quarter of a mile wide was dusted with 7,200 pounds of copper sulphate. The chemical killed the "tide" organism, it was stated, but twelve hours later the water was found to be as heavily contaminated as before the operation was begun.

It appears that there is some rivalry between researchers of the University of Miami and those of the University of Florida, both of which have received state appropriations for "tide" research, but want additional funds.

The Miami forces have been conducting their research, partly, on board the 85-foot *Physalia*, recently based at St. Petersburg, and the University of Florida scientists have opened a marine lab in the Bayboro section of the same city.

On Mullet Key, close to St. Petersburg, the University of Miami has established a temporary laboratory in a museum there, although it is using a field station at Boca Grande as the central point for organising its "tide" programme.

Boca Grande was chosen, it was stated, by Dr. F.G. Walton Smith, director of the university's Marine Laboratory, because it is nearest the focal spot of "Red Tide" outbreaks.

He said, also, that at the lab in Miami there are about half a million dollars worth of permanent facilities for the general fisheries research it carries on for the state.

It became known that Dr. Smith's staff recently discovered a new species of fish-killing microbe in analysing samples of water infected by the *Gymnodinium brevis*.

"Operation Drift Card," referred to in recent issues of the Fishing Gazette, resulted in the discovery of a large eddy in the Gulf of Mexico, in the area between Naples and Bradenton.

Knowledge of the eddy's location is expected to aid in fighting the spread of the "tide" when, and if, it again develops.

("Fishing Gazette" New York February, 1955)

What the Jangaard Longline Venture
Found in Mid-Pacific

During a recent commercial fishing trial of central Pacific tuna waters by two West Coast fishing boats, a total catch of 210 tons of Yellowfin tuna was landed at Honolulu and San Diego. This fishing was done in equatorial grounds previously explored by research ships of the Pacific Oceanic Fishery Investigations (POFI), a branch of the U.S. Fish and Wildlife Service in Hawaii. These commercial vessels, under contract with the Service, were given financial assistance to purchase fishing gear and make vessel alterations, and the fishermen undertook to test thoroughly the commercial possibilities of this potential fishery using two vessels to fish tuna longlines on a total of four trips, POFI biologists were aboard the boats on both sets of trips, and the following account is based on their observations -

First Cruises: On the evening of January 12, 1954, the *North American*, an 86' bait boat skippered by Captain Sverre Jangaard, and the *Alrita*, a 70' combination boat captained by Captain Lars Jangaard, departed San Diego for the tuna grounds near the Equator in the vicinity of Christmas Island.

About a month of fishing the two vessels put in at Honolulu, where they unloaded 103 tons of Yellowfin tuna at Hawaiian Tuna Packers, Ltd. Over 4 tons of market fish, including marlin, bigeye, wahoo and shark, was sold fresh at varying prices on the local market.

In all, the Alrita fished 31 days and the North American 30 days during the period January 27 to February 28, although the first few days of fishing were spent mainly in experimenting with the gear and methods of handling it. Once the vessels settled down to serious fishing, they averaged 57 baskets (855 hooks) of longline gear per day for the first set of cruises.

It is significant that on all but two or three days the two boats fished near each other. It had been planned originally that they would keep close company only during the first few days, while the fishermen were familiarising themselves with this type of fishing. From the outset, however, difficulties arose in the form of numerous breaks in the main lines due to the use of excessively lightweight fiber line and to the setting of gear across current rips in unfamiliar waters; for these and other reasons the two boats continued to fish within sight of each other. Somewhat of a handicap was thus imposed, for had the vessels separated during those periods when fishing was poor, they would have been able to scout a greater area, possibly increasing their catch by more rapidly finding new concentrations of fish.

Two Types of Fish: Generally, the Yellowfin consisted of two size groups. The smaller averaged about 55 lb. and were designated "school fish" since their capture was always accompanied by signs of Yellowfin at the surface. The other group of fish averaged about 135 lb. and were recognised as "deep-swimming Yellowfin," in that they were not seen at the surface and were captured both with and without surface signs of fish.

There was considerable fluctuation in the catches from day to day, but underlying these short-term variations there seemed to be three different periods in the fishing. The first, from January 27 to February 8, afforded moderately good fishing, with the best daily catch per boat amounting to about 3 tons. The second

period, from February 9 to 15, saw very good fishing, with a high day's catch of 9 tons by the North American. Finally, catches dropped back again to the earlier level, with the best catches ranging up to 3 tons. During the two periods of moderately good fishing the catch comprised large numbers of "school fish" with moderate numbers of "deep-swimming tuna". During the middle part of phenomenally good longline fishing the Yellowfin population around Christmas Island appears to have been augmented by an influx of large numbers of "deep-swimming tuna" that later left the area.

Summarising the catch of the first trip to the equatorial grounds, in 30 fishing days the two vessels combined captured 2,512 Yellowfin tuna weighing 206,110 lb. The average daily catch was 1.75 tons of saleable Yellowfin per vessel.

In addition to the 103 tons of Yellowfin that was delivered to the cannery, there were 298 Yellowfin damaged by sharks. Some of these were completely consumed except for the head, but others that were only slightly damaged were delivered to Honolulu and sold on the fresh fish market. The tuna delivered to Hawaiian Tuna Packers was processed into solid, chunk, and grated packs. Most of the fish were satisfactory for these standard packs, but in the judgment of the canners some were unsuitable and a 15% deduction was assessed against the loads. Most of the rejected fish were judged by Hawaiian Tuna Packers to be either too dark or too "green" for a light meat pack.

Gear Operated: The amount of gear fished was remarkable, considering that there were only seven men aboard each of the vessels. Because of the numerous breaks in the main lines, the captains did not want to chance having inadequately lighted gear out after dark, and the small number of buoy lights available, four on each vessel, was partly responsible for the limitation of the size of sets to a maximum of 70 baskets of longlines. Furthermore, the long baskets (1,620' main lines with 15 hooks) offered more resistance to the water than the 1,260' main lines and 11 hooks of the baskets normally fished by POFI research vessels; thus hauling was slower, averaging 26 seconds per hook as compared with 20 seconds per hook with POFI gear.

The gear used by the Jangaards was an adaptation of the most recent type of longline developed by POFI, the only essential difference being the longer main line and the increase in the number of branch lines from 11 to 15. One reason for lengthening the main line was to make the gear fish deeper; POFI results show that often the deeper hooks catch the most Yellowfin. During this cruise 46% of the Yellowfin were taken on the five deepest hooks, apparently justifying the increased main line length. However, the long baskets were hard to haul because of their greater weight. This put more strain on the line and the winch and appeared to slow down the hauling process, particularly when several fish were caught on a single basket.

The gear was set and hauled in virtually the same manner as used by Japanese fishermen and aboard POFI vessels, except that one significant modification permitted a crew of only seven men to carry out the entire operation. (The Japanese use up to 30 and POFI uses 9 or 10). This was the practice of not coiling the droppers in with the main line when the baskets were retrieved. The branch lines were made as short as possible, only 1 fathom of cotton line and 1 fathom of wire leader, and a rack was devised that would hold 60 branch lines and keep them clear during stowage. During hauling, the branch lines were stowed on these racks as they were unsnapped from the main line, and the main lines were stowed in canvas skates. In stowing the main lines the metal links to which branch and float lines are attached were arranged so they could be easily found. On setting, the gear was assembled as the main line paid out, branch lines and float lines being snapped in as needed. This system called for more work during setting than if the branch lines were left snapped-in and coiled down with the main lines, but it considerably lessened the work during the critical hauling period.

The fresh-frozen Alaska herring used as bait were double hooked, through the eye and back through the shoulder, in order to reduce the loss of bait during the soaking period.

Second Cruises: After selling the first catches in Honolulu, the two boats refuelled, provisioned, and sailed again on March 13 for the Line Islands area.

Fishing began on March 18 and was continued for 20 days by the Alrita and for 40 days by the North American. On April 7 the Alrita departed Christmas Island and arrived at Honolulu on April 15 while the North American departed Christmas Island April 28 and arrived at San Diego on May 15. There were no changes in the gear or fishing methods on the second set of cruises. The average numbers of baskets set per day were 63 (945 hooks) for the Alrita and 62 (930 hooks) for the North American.

The total catch of the North American on this trip consisted of 1,728 Yellowfin, 8 Bigeye, 64 Skipjack, 8 Albacore, 41 Black Marlin, 511 Shark, and a few miscellaneous fish. Tuna landed at San Diego amounted to 72 tons. The Alrita caught 689 Yellowfin, 22 Skipjack, 9 Albacore, 7 Bigeye, 16 Black Marlin, 216 Shark, and some miscellaneous fish. Of the 35 tons of tuna and about 7 tons of marlin landed at Honolulu by the Alrita, about 10 tons of Yellowfin and some of the marlin had been transferred from the North American when it became necessary for the smaller vessel to leave the fishing grounds after 20 days of fishing. The North American had an average catch rate of 4.4 Yellowfin per 100 hooks per day. Of her Yellowfin catch, 248, or about 14%, were mutilated by sharks. The Alrita averaged 3.6 Yellowfin per 100 hooks and had 12% of them damaged by sharks.

In general no such difference in the capture of fish by the deep and shallow hooks, as was seen on the first cruises, could be detected. The catch of Yellowfin per 100 hooks at the few stations away from the island was lower (averaging 1.9 fish per 100 hooks), and no particular area in the vicinity of the island seemed better than any other. The Yellowfin catch appeared to consist of at least two size groups, one weighing about 50 lb. and the other about 130 lb. The average weight of all Yellowfin taken on the cruise is estimated at 110 lb. More males were captured than females, the ratio being 54% males to 46% females when all sizes are considered.

The Alrita's catch was sold in Honolulu to Hawaiian Tuna Packers. Of the approximately 70,000 lb. of Yellowfin landed, the deduction to the fishermen was 6,109 lb. or a 9% loss. A large portion of the catch was packed as smoked tuna. Although the fresh

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market demand was poor, some of the market fish were sold locally.

The North American's catch was landed at the Van Camp Sea Food Company in San Diego, Calif. The cannery reported the weight as 144,316 lb., including a few shark-damaged fish. Rejections of cooked and cleaned fish by the cannery were observed; no honey-combing was seen, the majority of the rejects being "green" and a lesser amount too dark in colour. The total deduction was 36,162 lb. or about 25% of the load. The catch was packed as "bite-size" with the exception of a very small portion that was put up as flakes.

The weight of fish delivered constituted a capacity load for each vessel. The large Yellowfin did not stow handily so cargo space utilisation was poor, and furthermore some of the brine tanks were needed to hold fuel for the North American's return trip to San Diego.

Two Gilbertese natives from Christmas Island, one of whom spoke English, were employed when one of the North American's fishermen left the ship. They were paid \$2,60 for 8 hours work, after which they are entitled to overtime. Employment is being sought for these people and the Christmas Island Plantation encourages their use.

The Alrita's fishermen shared about \$2,100 for 51 days of fishing or 93 days at sea. Shares on the North American were about \$3,100 for 70 fishing days or 117 days at sea. Without government aid the Alrita shares would have been around \$1,100 and those of the North American about \$1,700.

What was Learned: In unfamiliar waters the seven-man crews from these two vessels successfully adopted a fishing technique heretofore used only by Japanese on vessels with 20 to 40 fishermen. On the first set of cruises each of the vessels averaged about 1.75 tons of Yellowfin per day of fishing and on the second set about 1.78 tons. There was an increase in the average weight of the Yellowfin captured from 80 lb. on the first cruises to 110 lb. on the second set. Although it has not always been the case on POFI research cruises, the commercial boats found better

fishing close to Christmas Island (within 60 miles) than at greater distances. The variability of the catch from day to day was so great that it was not possible to detect any clearly superior fishing grounds around the island. No fishing time was lost because of bad weather during the entire period of these cruises.

From these results it is to be concluded that it is commercially practicable for American fishing boats, using reasonably small crews, to fish Yellowfin tuna in the equatorial central Pacific by the longline method.

("Pacific Fisherman" California March, 1955)

Rock Lobster

Precanning Storage Tests: To determine the best methods of storing Rock Lobster prior to canning, whole fish, which were alive and active at the start of the test, and tails, both raw and cooked, were kept in air at room temperature and at 32° F. for varying periods. Examination of samples both before and after canning indicated that raw flesh kept better than cooked flesh under similar conditions, while tails alone stored better than raw whole fish. All samples satisfactorily withstood storage for 18 hours, both at room temperature and at 32° F., but only raw tails at 32° F. withstood storage for 48 hours.

Other tests, in which precooked tails in the shell were stored for one and two days in twice their weight of crushed ice, gave unsatisfactory results. There was a marked loss of quality, particularly in flavour and texture, although no signs of spoilage were detected.

("The South African Shipping News" Cape Town March '55)

West Coast Seabird Study

Studies made by the Division of Fisheries on the fish-eating birds of the St. Helena Bay area off the west coast of the Union show that gannets, estimated to number 200,000 in the area concerned, eat

a total of 73,000 tons of fish a year. Detailed results of the studies are published as a supplement to the January issue of Commerce and Industry, the official journal of the Department of Commerce and Industries.

Of the eleven species of fish-eating birds investigated three - the gannet, the cormorant and the penguin - are considered to be important predators of commercial species of fish, particularly the pilchard.

The 73,000 tons of fish eaten by the gannet comprise 37,000 tons of pilchards and 12,000 tons of maasbankers. These amounts represent about one-quarter and one-seventh respectively of the total commercial catches of the two species landed in the Union during the year 1953.

These figures, it is stated, are based on the examination of the stomachs of 98 gannets over a period of a year. They are, to a certain extent, an estimate and should thus be regarded as tentative and subject to alteration after more extensive research.

Based on the examinations of the stomachs of 37 cormorants, it is estimated that 30,000 birds of this species eat a total of 3,660 tons of fish per year, of which 1,800 tons are pilchards and 550 tons are maasbankers. These figures represent one-eightieth and one-hundred-and-seventieth respectively of the total catches of these two species in the Union for the year 1953.

Based on the examination of the stomachs of 17 birds, the food of the penguin in the St. Helena Bay area was found to consist of pilchard, maasbanker, anchovy, mackerel, harder and Cape rock lobster. The number of penguins in that area is not known.