
Vol. II, No. 7

July 1, 1953

STAFF NOTES

Assistant Inspector J. L. Gallop, who is assisting Inspector Bowler during the crayfish season, returned to duty early in June after annual leave.

Mr. L. G. Smith and Inspector H. J. Murray are at present on leave - the former for two weeks and the latter for six weeks. Inspector A. K. Melsom is relieving Mr. Murray at Mandurah.

Cadet Inspectors B. A. Carmichael and M. J. Simpson have been appointed to the permanent staff.

Inspector F. A. L. Connell is assisting Inspector Jeffery during the Albany whaling season.

Cadet Inspector D. Wright is undergoing training in hatchery techniques at Pemberton Trout Hatcheries, where he will remain for approximately three months.

Inspector R. M. Crawford has joined the crew of the "Lancelin" on indefinite posting.

Mr. E. J. Brownfield's appointment as Accountant, State Hotels Department, was gazetted on June 12.

C.S.I.R.O. PERSONNEL

Mr. R. G. Chittleborough, research officer, Division of Fisheries, who was recently sent to the

eastern States with a view to undertaking research on whales at the station at Tangalooma, Queensland, has now returned to Western Australia to continue research at the Nor'-West Whaling Company's station at Point Cloates.

Mr. W. B. Malcolm, research officer, Division of Fisheries, who three or four weeks ago visited Sydney with a W.A. University football team, is due back in this State early in July. While in Sydney Mr. Malcolm was married to Miss Margaret MacNeill, formerly a laboratory assistant with the Division of Fisheries. Congratulations!

Dr. D. L. Serventy, senior research officer, Wildlife Survey Section, in company with Dr. and Mrs. L. E. Richdale, of Dunedin, N.Z., has been visiting the south-western portion of the State. Dr. Richdale is a prominent member of the Royal Australasian Ornithologists' Union, and has made a special study of penguin, albatross and petrel ecology.

GERALDTON FISHERMEN'S CO-OPERATIVE SOCIETY LTD.

Mr. N. A. Landon, until recently the manager of this young and progressive co-operative, appeared before the Geraldton Court of Session on June 8 on a charge of having stolen £415/6/9 belonging to the co-op. Landon, who had made full restitution, pleaded guilty and was released on a bond. He was one of the originators of the co-op. and a foundation director.

Mr. F. R. Lemmon, formerly resident manager at Geraldton of Tropical Traders and Patersons Ltd., fish and crayfish processors and exporters, is the new manager of the co-op.

FISHING INDUSTRY CONFERENCE

A majority conference of fishing interests was held in Perth on June 8 under the chairmanship of the Minister for Fisheries (Hon. L. F. Kelly, M.L.A.). A full report is published on the next and following pages.

FISHING INDUSTRY CONFERENCE, JUNE 8, 1953.

REPORT OF DISCUSSIONS

The conference was opened at 10 a.m. in the Board Room of the Civil Service Association of W.A., 29 Barrack Street, Perth, by the Hon. L. F. Kelly, M.L.A., Minister for Fisheries, who presided. With the Minister were Messrs. A. J. Fraser (Superintendent), B. R. Saville (Acting Clerk-in-Charge) and J. E. Bramley (Supervising Inspector) and Mr. K. Sheard, M.Sc., of the C.S.I.R.O. Division of Fisheries. Miss Shirley M. Norwood, Fisheries Department, acted as conference secretary.

Also present were -

Representing Professional Fishermen - Messrs. W. O. Williams (Geraldton), R. E. Harvey (Swan River), W. J. Poole and C. M. Hansen (Fremantle), W. Matthie (Mandurah) and E. C. Harris (Busselton).

Representing Freezer-Boat Owners - Messrs. R. N. Saunier (Saunier & Kidson), G. Sidoti (W.A. Proton Fisheries Pty. Ltd.) and E. J. Annear (Annear and Wheeler Bros.).

Representing Crayfish Processors and Exporters - Messrs. J. Wade (Crayfish Exporters' Association), A. Buongiorno (Crayboats Co-operative Pty. Ltd.), G. Allom (Penn Boucaut Pty. Ltd.), P. A. Trouchet (Genex Pty. Ltd.), G. E. Russell (Russell Pty. Ltd.), F. J. Horwood (Golden Gleam Fish Processing Co. Pty. Ltd.), J. J. Farrell (Tropical Traders and Patersons Ltd.) and E. G. Thomson (Brown and Dureau Ltd.)

Representing Fish Cannery - Messrs. D. S. and R. Hunt (Hunt's Canning Co. Pty. Ltd.) and E. R. Sanders (Ocean Canning Pty. Ltd.).

Representing Fish Processors and Wholesalers - Messrs. J. S. Johnstone (Metropolitan Fisheries Ltd. and Northern Supply Co.), W. Johnson (Shark Bay) and L. A. Miles (Swan View).

Representing Fishermen's Co-operatives - Mr. W. S. Burton (Geraldton), Dr. J. S. Marian (Fremantle) and Mr. F. W. Gomm (Albany-Denmark).

Members of the Fishermen's Advisory Committee - Messrs. O. J. Benson, J. C. J. Gregory and N. E. Swarbrick.

Observers - Messrs. P. R. Lawrence, M.L.A., R. W. George (C.S.I.R.O. Division of Fisheries) and R. Hugall.

(Note: Certain of the abovenamed gentlemen in addition represented other interests not mentioned.)

At the invitation of the Chairman, representatives of "The West Australian", "Daily News", and Australian Broadcasting Commission were in attendance throughout.

In extending a cordial welcome to all present, the Minister said that he felt the discussions at the meeting would be of great benefit to the Department and to himself, as well as to all others present. He recalled that a very successful conference of a somewhat similar kind was held some years ago. Some very important matters were then discussed, and he was satisfied that afterwards a very much better understanding had existed between the different sections of the industry. He regretted the short time available to prepare for the conference, but this early date had been arrived at after considering several factors, not the least important of which was the fishermen's conference called for the following two days. He also regretted that the time allowed for the talks was not longer. He asked all speakers to be as brief as possible. He said an agenda had been prepared from items already submitted for discussion by the gentlemen present. He would take them in turn.

1. Restriction of Fishing Licenses.

Mr. Hansen said that his Association believed that certain crayfishing areas were being too heavily fished, and that too many boats were operating in some areas. He considered that the number of men and boats operating in certain areas should be limited.

Mr. Hansen continued that in some estuaries and on certain beaches there were too many net fishermen, and that the issue of licenses for those areas should be restricted. It had been found that many amateurs fished only at the best time of the year and so spoiled the professional man's only good period. The Association felt that no person who was not a bona-fide professional fisherman, i.e., a man who did not spend at least 6 months of each year fishing, should be issued with a professional fisherman's license.

Mr. Harris pointed out that if groups of fishermen were allowed to follow the fish on their migrations there would still be over-fishing even if there were restrictions on the issue of licenses.

Mr. Annear thought that licenses should be refused to boats coming to Western Australia from other countries to engage in crayfishing as they had their own crayfishing industry where they came from. They came here with larger boats and poorly paid crews. He asked whether anything could be done to stop more boats coming from South Africa.

The Minister said the position was being examined at the present time, and a decision would be reached in due course.

2. Qualifications of Professional Fishermen.

Mr. Gomm said that the Albany and Denmark fishermen considered that before a professional fisherman's license were issued the major part of the applicant's time, or at least 9 months of each year, should be spent fishing for a living.

Mr. Hansen in support said that in Fremantle there were men from all walks of life, shopkeepers and the like, holding professional fishermen's licenses who were working to the detriment of the men who are in the industry.

The Minister explained that this matter also was receiving attention by the Department at the present time.

Mr. Sheard said that the C.S.I.R.O. realised that fishing was a skilled occupation, particularly

crayfishing, and that his views on this subject were in complete agreement with what the fishermen thought on the matter.

3. Primary Producers as Professional Fishermen.

Mr. Gomm said that in Albany and Denmark it was the practice for some primary producers to take out licenses and fish against the professional fishermen when the fish were running at their best, and then return to their farms. He considered that there were plenty of professional fishermen in that area to catch all the fish if the others did not come in.

The Minister said this matter would be considered when the whole subject of restriction of licenses was being reviewed.

4. Fishermen to be Classed as Primary Producers.

Mr. Gregory said that after some discussion the fishermen had now come to the conclusion that they would prefer that the industry be classified not as a primary industry but as the fishing industry, in the same way as the mining industry was recognised as a separate industry - one which in many respects was comparable with the fishing industry. Concessions similar to those made to the mining industry, which were very considerable, should also be granted to the fishing industry. The hazardous nature of the occupation should be taken into consideration. All fishermen, as soon as they went out on the water, were at the mercy of the sea regardless of the size or the efficiency of their plant. Owing to the hazardous nature of their occupation they were required to pay higher insurance premiums, and some insurance companies declined to cover fishermen. The fishermen felt they should be a separate industry with their own concessions. Mr. Gregory did not feel that classification of the fisherman as a primary producer would cure many of the industry's ills.

5. Registration Fees for Fishermen's Motor Vehicles

Mr. Gomm explained that primary producers paid one-half of the normal fee for registration of one truck. Many of them came into competition with fishermen. He was of opinion that if farmers were

entitled to a concession rate fishermen were even more entitled to it because of the very high depreciation caused by salt water and the bad roads and sand tracks over which they had to travel.

Mr. Hansen said fishermen's trucks were used for carting their products from the sea to factories or markets and should at least get the same concessions as other producers of food.

6. Revision of the Fisheries Act.

The Minister pointed out that the Department was at the present moment considering the matter of the consolidation of the Act. He would however like to hear any suggestions on specific matters.

Mr. Hansen said his Association had discussed the matter and considered that penalties should be increased. The fishermen considered that the penalties at present fixed by the Act were no deterrent at all. They considered that anyone caught with plucked crayfish should have his license suspended automatically. He thought a committee should be appointed to consult with the Fisheries Department concerning these matters.

Mr. Gregory said that the automatic forfeiture of nets used illegally was a most unjust penalty. He said the net was part of a fisherman's tools of trade, and that the forfeiture of an expensive net inflicted a penalty out of all proportion to the offence committed. He suggested that in the event of a man being convicted of using a net illegally he be deprived of the net for a period of, say, 3 months, or an increase in the penalty be effected, but the man must have his net back eventually. He said that in the event of a man breaking and entering a building, the getaway car was never confiscated.

The Minister said he thought the case instanced by Mr. Gregory was not analagous. When a criminal had a car to assist in carrying out his illicit acts, the car was not confiscated but neither was the fisherman's boat.

Dr. Marian agreed that a committee should be set up to confer with the Department before any amendments to the Act were put before Parliament.

He also agreed concerning the confiscation of nets. He thought the matter of forfeiture should be left to the discretion of the Court and not dictated by the Fisheries Act. He considered too much discretion was allowed to Fisheries Inspectors, especially with regard to the issue of licenses. A licensing officer, subject to any direction by the Minister, might issue or refuse a license at his discretion. Any applicant who was refused could appeal to the Minister, but he objected to that. The appeal should be to a magistrate in open court. Dr. Marian thought that if a license was to be suspended after conviction for an offence, it should be done immediately and not left until some months later, as was done recently.

Mr. Harvey was of the opinion that all penalties and fines should be left to the discretion of the magistrate and no minimum stipulated in the Act.

Mr. Harris disagreed with the provision in the Act which in effect said that licensed amateur fishermen must be fishing with the intention of selling before they could be prosecuted for the offence of fishing for sale without holding a professional fisherman's license.

Dr. Marian suggested that Fisheries Inspectors be given the powers of Health Inspectors in respect of the condemnation of fish unfit for human consumption.

Mr. Gomm disagreed with new Regulation 13 dealing with priority among netters. He said any licensed fisherman with boat and net can come on a beach and demand a shot.

Mr. Johnson thought it would be a very great mistake to interfere with the automatic forfeiture of convicted fishermen's nets. He said a fisherman fishing with illegal nets was deliberately flouting the law.

Mr. Annear considered fishermen should be given the chance to buy back their own nets after confiscation.

7. Closure or Denial of Waters by Bodies other than Fisheries Department.

Mr. Hansen said that in the south the State Gardens Board had approached fishermen and told them that they could not have net-racks on certain of the beaches. He did not think that a body which was not interested in fishing at all should have the power to prevent fishermen from following their lawful calling. In some areas it was impossible for a fisherman to take his net 10 or 15 miles to his home to dry and effect repairs. He thought the Fisheries Department itself should have the power to close such areas, and not outside bodies.

Mr. Gomm supported the previous speaker, particularly in regard to the Beaufort and Wellstead Estuaries, now controlled by the Gnowangerup Road Board. He said that hundreds of tons of fish had died recently in Beaufort Inlet because of lack of food, etc., and had the fishermen been able to fish in those waters those fish would not have been wasted but could have been given to the public.

Mr. Harris said that the majority of the places the State Gardens Board were now closing were opened up originally by the fishermen themselves.

8. Provision of a Voluntary Board to Control Marketing.

Mr. J. S. Johnstone considered that a voluntary board was the only authority which could properly control fish marketing. He said Metropolitan Fisheries Ltd., whom he represented, sent fish to Albany, Bunbury and Geraldton where were produced enough fish to supply the whole of their own local population. This was uneconomical. He thought a voluntary board where only the secretary was paid was the best way of bringing the fishing under control.

Mr. Farrell said he had the good fortune last year to make a trip overseas, and he took the opportunity of looking over fish marketing in Great Britain and the United States. What particularly impressed him was the fact that there was very much to be done in this State in regard to processing,

distribution and transport of fish. He said he would be very happy to see a voluntary board, and offered his experience and services to such a board.

Mr. Matthie supported the previous speakers. He said fishermen generally were very perturbed over the marketing position. He believed that some organized system of marketing must be brought about in this State. Distribution and transportation should also be looked into.

9. Statutory Powers for the Associations.

Mr. Hansen said the members of his Association considered legislation to be necessary to give the Association certain statutory powers. He said they found many men stayed outside the Associations. The Association considered that they should have some say in who should be professional fishermen and who should not. They did not want to stop anyone fishing professionally full-time, but they did object to men fishing only during the best period of the year. They thought the Association should have statutory powers regarding the granting or refusal of licenses.

10. School for Fishermen.

Mr. Hansen said his Association thought the Government should set up a school to train young fishermen and newcomers to the industry the elements of navigation. It was just as important that a fisherman who sailed far afield to fish be trained in navigation as a seagoing man.

Mr. Harris suggested that fishermen be given the opportunity to train on Departmental boats.

Mr. Gregory suggested that voluntary classes be held, perhaps one or two nights a week by experienced men like the pilots of the various ports. This would give the genuine man the opportunity of learning those things.

Mr. Johnstone said that at the end of the war the Federal Government earmarked a fair amount of money for training returned servicemen in this way and took

some men from Western Australia. The training they had in the eastern States did not help them in any way to handle fish in Shark Bay.

Mr. Harris thought the school in Cronulla was one of the best things ever set up for the fishing industry in Australia, but unfortunately it was only for ex-servicemen who had a leaving certificate standard of education. The older fishermen were not able to go there.

Mr. Gomm said that he had wanted to attend the Cronulla school, but had not been selected because of insufficient educational qualifications.

Mr. Allom said that a large proportion of Fremantle fishermen were Italians and compulsory schools would be a great hardship on the older fishermen. He considered that some consideration should be given to those men who were quite able to find their way about the seas.

Mr. Buongiorno did not think the previous speakers had meant to stop any older fisherman going out but to provide schools for the fishermen of the future. He thought that if the Department held a school which was not compulsory it would be very useful.

The Minister said that if any move was made in that direction it would mean that any competent man now operating would be issued with a certificate to enable him to carry on.

Mr. Williams mentioned the recent showing of films by the Department and suggested that this form of education be continued.

Mr. Sheard suggested that any school that was adopted should be much wider than a navigational school. The fishermen should also be instructed in fishing, fish handling and processing methods.

Mr. Annear suggested that sailing clubs might help. He said the Fremantle Club had arranged for several lectures on fishing and navigation.

11. Increased Minimum Size of Crayfish.

Mr. Trouchet said that in view of the poor price midget crayfish tails were fetching in America he considered the minimum size of crayfish should be increased. He understood New Zealand had raised the minimum size as a protective measure and he suggested this State do likewise. This would allow the small fish to grow larger and also give the product a higher price.

Mr. Farrell said that the continued marketing of a big proportion of the midget grade meant the lowering of the average price of crayfish because of the high buyer-resistance they were up against.

Mr. Burton said his Co-op. in Geraldton was perturbed about the midget crayfish. However the crayfish which produce midget tails comprised about 40% of the total catch, and if that 40% were taken away from the fishermen they would be forced out of the industry.

Mr. Russell said that the exporters could only exist where the industry existed. He said we should not overlook the fact that our midgets were the same as the South African smalls. It would be very hard on the fishermen if there were a cut in production by increasing the size.

Mr. Buongiorno said that in Fremantle the midgets came from the white crayfish stocks only. The rest of the year the crayfish were of a good size. He said a good crayfish of $2\frac{3}{4}$ " carapace length (the present minimum) was a small, not a midget. The midgets were undersize crayfish and should not be caught.

Dr. Marian said that very nearly 1,000,000 lb. of crayfish (excluding the white crayfish) had been caught this year and the midgets were in the normal proportion and easily saleable in America. He thought the problem at Fremantle was the white crayfish. Nobody knew where white crayfish came from or where they went. He considered not enough research had been done. If it could be proved by tagging or some other method that the white crayfish did come back, then they should not be caught. Nothing should be done however until something could definitely be proved.

Mr. Sheard said that this problem was one of the central problems of the crayfishery. He felt that the restriction of licenses, the increased minimum length of crayfish and the increase in size of gaps in craypots, were very closely linked. The average catch was slowly coming down to the permitted legal minimum simply because the fishermen were forced to fish their grounds over and over again so that inevitably they must catch smaller crayfish. Crayfish did not move as the pelagic fish move. 11 miles was about the average distance travelled. The 2 $\frac{3}{4}$ " class gave small mature crayfish and the midgets usually were, but not always, immature. He thought he had enough facts to support the theory that the white crayfish were immature red crayfish. He had kept white crayfish of the southern species and they had gradually darkened until they became the normal type of southern crayfish. Unfortunately it had not been possible to do that on the west coast. In the middle of an intense fishery it was very difficult to carry out a tagging operation which would give any reasonable return. He thought however that he would have to try to find some way of doing it this year. In his own mind he was reasonably convinced that the white crayfish was the ordinary Westralian crayfish. Mr. Sheard said he would submit a full report on the subject to the Minister in the near future.

12. Closing of Fremantle Area to Crayfishing

Mr. Buongiorno said that prior to the war, when he was working 17 pots, he used to work from August to the middle of February south of Rottnest and then from February 15 worked north of the Island. He always found the northern ground full of crayfish and then the next season started south again. He would like to see the waters south of Rottnest Island permanently opened, and the waters north to be opened from November 25 to December 15 and closed again to February 15. He said the crayfish from the south bank of Rottnest never reached Fremantle in good condition, so all boats should be equipped with wells. His organisation believed that the only way to protect the crayfish was to protect the grounds.

Mr. Farrell was surprised that Mr. Buongiorno stipulated well boats. He said a lot of money had been spent on other boats as well as the well boats, and they were most satisfactory.

13. Freezer Boats North of Port Gregory.

Mr. Saunier said that his Association felt that if they had permission to fish north of Port Gregory, they might further the interests of the area in that they may prove that grounds were there and smaller boats could then come along. While they were not interested in purchasing crayfish, they were interested to go up there and catch crayfish and process them on their own vessels.

Mr. Allom supported Mr. Saunier's remarks. He considered that if grounds were opened north of Port Gregory nothing would happen to the grounds south of that point.

Mr. Gregory asked what area these men meant by north of Port Gregory.

Mr. Saunier said he meant to fish anywhere north of Port Gregory. Unfortunately, he said, there were not very many good anchorages there and the area was undeveloped. He thought that about 2 boats fished at the Murchison on very odd days and they then had to take their catch 100 miles by road. Crayfish from there actually reached Geraldton in very very minute quantities. There were large areas that were not capable of being fished by the small boats there.

Mr. Annear supported Mr. Saunier and Mr. Allom on this particular matter. He felt that freezer boats had done, and still could do, a tremendous job in developing crayfishing generally in this State.

Mr. Horwood said he had no objection to the suggestions made that the processing vessels should go north along the coast. He said that in the past it had been the practice to bring crayfish down from that area by road and by boat. He would suggest, however, that they be not allowed to operate in the immediate vicinity of Port Gregory because the factories in Geraldton would find it very difficult to operate in the off-season unless they retained the Port Gregory catches.

Mr. Williams said that there were no well boats at Geraldton, and although they had had

surprising losses they still got through.

Mr. Gregory said that when the Geraldton Fishermen's Co-op. was established they had to agree not to press for freezer boats, so they had to have a shore-based plant because the 30th parallel boundary was to protect them.

Mr. Saunier said the freezer boats were not interested in the purchase of crayfish; they were interested only in the processing of fish they themselves caught as fishermen. They were not in opposition to shore-based factories. They were only asking to be able to freeze their own catch. They were not interested in fishing in or around Port Gregory. The only reason Port Gregory was mentioned was because they must have somewhere to anchor in bad weather.

Mr. Annear said that if Port Gregory was a good base and the crayfishing industry could be developed there then he considered it was very much underdeveloped with only 4 boats there.

Mr. Williams said that they had once had a freezer boat supporting 12 vessels there.

Mr. Sheard said in regard to landing crayfish whole and alive that the fishermen would find that no export clearance would be given to crayfish processed dead.

14. Fishing for Crayfish between Mainland and Abrolhos.

Mr. Farrell said that this was an application by a group of boats in Fremantle who had been operating there during the past season and who had asked him to make an application based on information they had that there was a large area of deep water between the Abrolhos and the mainland and there were not suitable boats in Geraldton to work it. The reason he had supported them was that Tropical Traders & Patersons plant at Geraldton had additional capacity to take crayfish for processing.

Mr. Annear asked whether any experimental work had been done in that particular area.

Mr. Sheard said that some had been done but not from the point of view of commercial crayfishermen. There were isolated spots where there were crayfish at certain times. He thought it was to some extent a dead area and did not think one could test it.

Mr. Hansen said that there were two boats in Geraldton which could develop the area. He understood there were two boats putting in echosounder equipment to assist in developing the northern area.

15. Albany-Denmark Fishermen's Co-op. - Complaints by

Mr. Gomm said that the cannery at Albany was the lifeblood of a great number of fishermen in the area and so far as salmon were concerned, everyone was happy, but the position with the herring and other fish was not good. So long as the fishermen could obtain £40 a ton for herring and selected fish for the glut period they were happy, but recently they were offered as low as £20 a ton. A lot of the trouble was distribution and it was thought that the cannery should get a little more for its packs. It was known that the wholesalers and the storekeepers were getting far too much. Whereas the fishermen got only 4d. a lb. the storekeepers got about 10d. a lb. The fishermen were satisfied with £40 a ton but the trouble was the cannery could not can more of the fish. The Albany and Denmark fishermen had been asking for some time to be able to transport their fish to Perth by road at such times as the cannery was unable to buy or the price offered was not sufficient. The men had no desire to send their fish to Perth when the cannery could accept them. Mr. Gomm said his Co-op. felt that fish were not displayed properly in the metropolitan shops, and suggested that the Minister compare them with at least one of the fish shops in Albany. He felt the prices should be the same in all centres; there should be no differential.

Mr. Johnstone said that his Company was a wholesaler. Unfortunately, he said, one firm was bringing its fish down each week from north of Shark Bay and selling it to the retail shops at an average of 3d. a lb. less than the maximum wholesale price. If that could happen he thought there must be something radically wrong with the fishing industry.

PERSONALITIES AT FISHING INDUSTRY CONFERENCE



Left to right—Messrs. K. Sheard, E. R. Sanders, E. J. Annear, A. J. Fraser, J. C. J. Gregory



Left to right—Mr. E. J. Annear, Hon. L. F. Kelly, M.L.A., Messrs. J. E. Bramley, G. E. Russell,
E. C. Harris

Mr. Annear said that the real cause of the bad display of fish was the way they were held in the freezers. Shopkeepers could not display them properly if they were in a bad condition when they were received.

Dr. Marian agreed with Mr. Annear's remarks. He said the first thing to be considered was the transportation of fish from various areas to Perth. Unless that fish were transported in a reasonable condition it did not matter what was done here in Perth; the fish could not be displayed in good condition. He suggested that margins be fixed by the Prices Branch instead of prices as there was too much difference between the price paid to the fishermen and the price paid by the public.

Mr. Russell supported a lot of what Dr. Marian had to say. He thought that one reason why the fishing industry in this State was in such a chaotic state was that there was very little packaging of fish. He thought the Government could play a very important part in the fishing industry if they did their utmost to support the packaging of fish. There was no better way to popularise fish. He said however that something would have to be done about price control because it was impossible to package fish on the margin granted by the Prices Branch.

Mr. Johnstone said that one of the main difficulties was transport. His company during the winter months had a very good trade with Kalgoorlie but during the summer this trade stopped because of the transport problem.

Mr. Russell pointed out that the answer to that was again the packaging of fish. These packs could be quite easily transported and took up very much less space.

Mr. Horwood suggested that when dealing with the distribution of fish it should be tackled in two phases - whole fish and processed fish. He thought the present prices schedule, which was full of anomalies, should be reviewed.

Mr. Gonn emphasised that the fishermen at Albany and Denmark were happy to supply their fish to the cannery if the cannery could continue to process

those fish, but he understood that the price received by the cannery was not sufficient.

Mr. D. S. Hunt said that when he first began putting out the "Snowman" pack he thought the price high and the money easy, but before very long he realised that on most of the lines there was a loss instead of a profit. Mr. Hunt said that during his aerial surveys of the south coast this season he had seen almost unbroken lines of herring from Cape Naturaliste to Eucla. Nobody in Australia could have processed all those fish. In a normal season the cannery could handle all the herring offering.

16. Tax for Financing Research Fund re Crayfishing and Special Grant from Government to Finance Development

Mr. Trouchet suggested that the Government should impose a levy on crayfish produced to provide funds to finance research into crayfishing.

Mr. Harvey suggested the Federal Government be approached for a grant.

Mr. Hansen said that during the last few years the fishing industry had earned valuable dollars and the canning industry had expanded. His Association considered that special grants should be made from Commonwealth Government funds for the development of the industry. This could be done by chartering fishing boats and getting the fishermen to do most of the work. Money from the fish caught could be paid back to the Government and anything above the grant should be returned to the fishermen as an incentive. The Government could supply the fishermen, canneries and road transport with certain gear to help with the work.

Mr. Gonn informed the meeting that the Federal Government had granted various sums for putting in roads around beaches for the fishermen.

Mr. Sheard said that the C.S.I.R.O. spent nearly £450,000 annually on fisheries investigations in Australia. He said that some firms represented today had made quite substantial contributions to the C.S.I.R.O. He wanted to point out that as far as the Commonwealth Government was concerned their scientific work was spread about as far as it could go.

LUNCHEON ADJOURNMENT 1 p.m. - RESUMPTION 2 p.m.

17. Special Licenses to Supply Local Market with Crayfish in Close Season.

Mr. Hansen suggested that two or three boats be allowed to catch crayfish for the local market during the close season. This would help the boats and also let the local public have their crayfish.

Mr. Buongiorno said that his previous recommendation that the waters south of and adjacent to Rottnest Island be open all the year would provide crayfish for the local market during the usual close season.

18. Pots for Amateur Fishermen.

Mr. Hansen said that his Association was of the opinion that amateur fishermen should not have more than one craypot or one fish trap. If they had more they were not working as amateurs. Another thing, he said, was that amateurs were taking crayfish right in on the shallows adjacent to the shore, and a large number of small crayfish were being sold by them. He said that in Albany some amateurs were setting fish traps in Oyster Harbour and catching fish for sale, not for their own use.

Mr. Annear said that there would be at least 15 small boats working in the vicinity of Safety Bay and working 8 or 9 pots each.

19. Escape Gaps in Craypots

Mr. Ferrell explained that this matter had been put forward as a matter for consideration rather than as a recommendation. The thing they had to consider was whether having a 2" space at the bottom of each craypot would enable undersize crayfish to escape.

Mr. Russell said that the industry was very young and still in its inspirational stage, and asked whether Mr. Sheard's findings and figures and the figures of the Fisheries Department were really positive at this stage. He considered it would be foolish to fly in the face of any recommendation of the C.S.I.R.O., but asked that their approach be very cautious and that any decision be based on the data they had at the moment.

Mr. Williams said that three or four years ago Mr. Sneard suggested that a gap of 2" be left above the bottom batten. The fishermen used batten pots with the 2" gap and found that if there were a particularly full pot of small crayfish they did not escape through that gap, but that the bigger ones had a tendency to force their tails through it and were bitten by fish outside. He suggested that if it were necessary to have an escape gap it be put nearer the top so that the fish would not be destroyed.

Mr. Saunier said that if the small crayfish could escape through the larger gap they could get in through that gap, and thus prevent some of the bigger ones from getting in.

Mr. Gregory pointed out that all batten pots had 1½" gaps all the way up and around the pot and yet the tiny crayfish did not escape. There was no evidence to show that a crayfish just undersize would go through a 2" gap. It would be impracticable to have a 2" escape gap in a cane pot.

Mr. Buongiorno said that if the space from one stake to another were increased the pot would last only a very short period because in the water the stakes became thin, and if one broke off the pot was useless.

Mr. Poole expressed the opinion that if there were still bait in the pot the small ones would remain as well as the big ones. He had had pots with more than 2" between the stakes and had caught crayfish which would escape out of a 1" space. When the pots were being pulled the small ones had no chance of escaping because the bigger ones held them in.

20. Central Co-operative.

Mr. Hansen said that the Fishermen's League had considered this method of distribution of fish for some considerable time. They thought the only way to overcome the glut problem was to have a central co-operative so that fish could be distributed right throughout the State. The idea would be to see that the public got the fish at a reasonable price, that the fish were brought in good condition and that the black market in fish were destroyed.

Mr. Harris thought that the only way to get around the marketing problem was to have a central distribution centre instead of the fishermen marketing their fish through different country centres. If there were a co-operative in Perth with a distribution centre the fish that were sent from the outports to Perth would not have to come to Perth. The fish could be sent to country centres without coming through Perth. If the fish were put on the market at reasonable prices they would all be sold.

Mr. Matthie said in his opinion there would have to be compulsory acquisition of all fish. In that case it would be necessary to set up branches of the central co-op. and instead of sending fish through Perth they could be sent direct to country centres from the outports. He suggested that the Government put a levy of, say, $\frac{1}{8}$ d. per lb. on all fish handled. He thought the fishermen would be only too happy to pay that. The fishermen were very perturbed about the whole question and felt that a market should be put up in the fish market block in Perth. If such an establishment were available the fish could better be dealt with by the health officers and prices officers.

Mr. Gregory supported the proposed co-operative setup. He said that what he actually visualised was a wholesale distributing block. Fish would be available at a reasonable price the whole year through. The processed article also had been visualised but could only be effected if the co-op. had control of the whole supply of fish.

Dr. Marian thought this was a matter for more consideration. He could not see why there was the necessity for the central co-op. and a board as well. He was doubtful whether the various small co-ops. would all agree on the way certain things should be done in a central co-operative. He did not think anything could be done about it until all the minor disagreements among the fishermen had been thrashed out. Dr. Marian wanted to know who was going to finance the project. He thought it should be a job for the State Government. Unless the fishermen themselves saw that they had to do part of the work themselves and to come to the Government for some information and advice his opinion was that it would get nowhere. He said he

was in favour of a central distributing body but felt that co-operatives should first have a round-table conference before committing themselves and submit their views to the Minister.

Mr. Williams said that the matter had been thrashed out at Fishermen's League conferences for many years and everybody had been in agreement.

Mr. Farrell said that the trend of the conference and the discussions tended to ignore the private enterprise capital invested in the industry. This had been doing quite a worthwhile job. Just at the present there was one matter worrying the wholesalers and that was the matter of the snapper coming down from Shark Bay this season. The margin between the fishermen's and the wholesaler's prices was not sufficient to provide for the proper handling of that product.

Mr. Annear supported Mr. Hansen and Mr. Gregory in the matter of a central co-operative. He said that his company sold as wholesalers and it was pretty well impossible to get the full wholesale price for his frozen fish to compete with the price the fresh fish man got for his fish. He thought the Fremantle Co-operative was falling down on its job because they had asked him to sell some of their fish. He said the fishermen had had to take their fish around the town themselves to sell it.

21. Importation of Fish.

Mr. Hansen said that during the last 6 months nearly 6,000,000 lb. of imported fish had been brought into this State. This figure did not include canned fish. The retailers were handling more of the imported fish than they were our own.

Mr. Miles said that he had built a factory for smoking fish and hoped that he might be able to help the fishing industry get rid of some of its gluts.

Mr. Russell said that Iceland cod and similar lines seemed to be very well liked by the retailers, and the matter seemed to come back to the fact that it was a pre-packed fish which was filleted. He said another matter to be considered was the freedom of trade.

Mr. Horwood said that if the local processors paid the fixed price to the fishermen and wages remained as high as they were, the processors could not make a profit at the fixed price.

Mr. Johnstone agreed with the remarks of Mr. Russell and Mr. Horwood up to a point. He said that most of the imported fish came from South Africa where labour at low wages was employed and there was no 40-hour working week. They also caught their fish with nets whereas any local fish to compare with them would have to be handlined. He thought the price of fish in this State was too high.

Mr. Gonn said that the imported fish was having a serious effect on local fishermen and he was of the opinion that some firms tried to sell more of it than they did of the local fish.

22. Government Assistance to Crayfish Tail Industry.

Mr. Trouchet said his company felt that something should be done in the matter of advertising Australian crayfish in America. For many years South Africa had been exporting crayfish tails to the States and in the past they had been assisted to the extent of about \$120,000 a year by the South African Government. Although the South African product was no better than ours, merely by virtue of the effect of the advertising they were receiving 7 or 8 cents a lb. more. He thought that if Australia were to receive similar support from the Government the fishermen could be paid a better price and it would advertise the country and its other products as well as crayfish. Another matter was that of shipping the tails to America. Mr. Trouchet said shipments to America were very spasmodic and badly spaced and consequently the tails arrived in New York in very large quantities which meant a drop in price. South Africa had its shipping so organised that it had one ship a month throughout the year. This meant that their fish arrived at regular intervals and so maintained a good price.

23. By-Product from Fish.

Mr. Annear said that he had been quite perturbed that there was such a tremendous quantity

of herring available at Albany which it was impossible for Mr. Hunt to treat. He wondered whether it would not be possible for some by-product from the offal to be produced along the lines of whale meal. He said that poultry farmers were crying out for fish meal. He also wondered whether it would be possible to produce a by-product from crayfish offal. He was very concerned over the big percentage of waste in crayfish and thought perhaps some of the factories along the coast could make it into meal.

Mr. Gomm said that if the herring were made into fish meal it would be rather expensive because it was impossible for the fishermen to catch them at less than £40 a ton.

Mr. Gregory said he would welcome anyone who could do anything with crayfish offal, but crayfish made into a meal was no good for anything. It had to be fortified and the materials used to fortify it cost more than the meal was worth.

Mr. Farrell said that he had written to South Africa on this matter. They said they were turning crayfish offal into a meal, but only to get rid of it. It was not worth doing it for any other purpose. He had also written to U.S.A. and was told that generally speaking throughout the world it has been found totally unprofitable.

24. C.S.I.R.O. Surveys to be Made Available to Fishermen.

Mr. Hansen said that his Association considered that all information gained by the C.S.I.R.O. on the fishing industry should be made available to the fishermen.

Mr. Annear referred to the recent survey down south by the "Suda Bay". He said that after that survey he took down one of his boats and tried to work there but the C.S.I.R.O. said they had not found anything and they could not give him any report on what had been done. Mr. Annear agreed that reports should be given to the co-operatives and the fishermen.

The Minister said he thought the policy of the C.S.I.R.O. was to be very very certain of what information they passed on and naturally they could not do that at short notice. In the case mentioned by Mr. Annear he thought one survey would not show very much at all.

25. Crayfishing outside the 3-Mile Limit.

Dr. Marian said that he had heard that Japanese pearlers had been allowed to fish off the Australian coast outside the 3-mile limit. He thought that something should be done about that because he had received advice that enquiries had been made from outside Australia to bring boats to Western Australia for the purpose of crayfishing. There was power in the Commonwealth Constitution to pass legislation regulating fishing beyond territorial waters. He suggested that the Federal Government be approached to make a proclamation and fix the limit at 200 miles as had been done by Peru and other South American States.

Mr. Fraser said that negotiations were at present in train in Canberra between representatives of the Commonwealth Government and the Japanese Government concerning pearl fishing in extra-territorial waters. As far as fishing was concerned there had been no suggestion that any nationals from other countries would come to work in waters outside but adjacent to the territorial waters of any of the States. He did not know whether Peru would be able to enforce the 200-mile limit against any superior power. The State Government could prohibit any dealings in fish brought into our ports, but he did not think there was any possibility at all of people coming from other parts of the world to fish in our waters.

Conclusion, Felicitations, etc.

Mr. Fraser expressed to Mr. Kelly the Department's appreciation of his having convened the conference. He was sure the Departmental officers and Mr. Sheard had learned a very great deal from the discussions. There had been many very interesting suggestions. He thanked the Minister and everybody present.

Mr. Gregory moved a vote of thanks to the Minister for coming along and hearing all the different points of view. Mr. Gregory had been very happy to hear the other man's point of view and he thought they would get a very fair hearing and judgment from Mr. Kelly. Mr. Matthie seconded the vote of thanks which was carried with acclamation.

The Minister thanked Mr. Gregory and Mr. Matthie for their remarks and the meeting for the way in which they had been received. He said that all views expressed today would be given every consideration. It was the duty of the Department and himself to get down to a basis that would be reasonably satisfactory not only to the bigger sections of the industry, but also to as many of the smaller units in the industry as possible. He said he would do his best within reason to meet the wishes expressed at the meeting and when the revised Act came out he hoped to have ironed out some of the anomalies that apparently existed in it at the present time. Mr. Kelly thanked Mr. Lawrence, M.L.A., the member for South Fremantle, for coming along and listening in at the meeting. He thanked the departmental and C.S.I.R.O. officers for their help. He also thanked the press and the A.B.C. representatives for having seen fit to come along and give the conference the coverage they had. He then thanked Mr. Fraser, as President of the Civil Service Association, for having arranged for the loan of the Board Room for the meeting.

The Minister concluded by mentioning the matter of finance. He pointed out that many of the suggestions made today would require much money, and the finances of this State, and possibly of the Commonwealth, were somewhat strained. Money was extremely limited, and whatever was done would need to be done on a strict priority basis.

The meeting closed at 3.20 p.m.

C.S.I.R.O. CRAYFISH PROGRAMME

Further experimental work at the Abrolhos is being carried out this year in an endeavour to discover the migratory habits of crayfish and to ascertain what effect the highly intensive fishery which has developed in post-war years has had on the stocks.

Mr. Keith Smeard, research officer of the Division of Fisheries, is directing the investigation, while Mr. R. W. George, of that Division, is in charge of field operations.

The crayfish are being marked by punching holes of various designs - heart, star, oval and circle - in their tails. After punching the crays are released in the vicinity of Gun Island, Pelsart Group. It was expected that some of the marked fish would be recovered in that Group, while others would possibly find their way to the Wallabi Group.

Assisting Mr. George in this work is crayfisherman Colin Hancock, of Geraldton, whose 16-foot boat "Betty Robin" has been chartered for the purpose.

CRAYBOAT LOST

A 22-foot crayboat, the "Ajax", capsized and sank off the Abrolhos about midday on June 19. "Ajax" was owned and operated by Mr. Owen Quartermaine, one of the most successful of the younger fishermen working out of Geraldton. Mr. Quartermaine, who escaped injury, was alone in the boat at the time.

"Ajax" was travelling through Sandy Island Passage, south of West Wallabi Island, when she was struck by a huge breaker and capsized.

Mr. Quartermaine was thrown clear, and clung to the mast for some time. He then endeavoured to swim ashore with the aid of some timbers which the heavy seas had broken from the boat. Because of the strong current he made little headway, but was shortly afterwards picked up by crayfisherman Jack Long.

Abnormally consistent bad weather throughout June prevented many fishermen at the Abrolhos from pulling their pots.

FAUNA PROTECTION IN SOUTH-WEST

On May 27, the Chairman (Mr. Fraser), Dr. D. L. Serventy and Mr. G. E. Brockway - members of the Fauna Protection Advisory Committee - accompanied by the Acting Secretary (Mr. H. B. Shugg) and the Fauna Warden (Mr. J. Traynor), left Perth by road to investigate certain aspects of fauna conservation in the South-West. Unfortunately Mr. L. Glauert and Mr. A. R. Tomlinson, the other members of the Committee, were unable to accompany the party through pressure of other business. Inspector A. V. Green joined the party at Bunbury and was present at the Busselton and Donnybrook meetings and Major H. M. Whittell also attended the Busselton meeting.

An inspection of a proposed sanctuary 12 miles west of Waroona was made. The area concerned consisted of a swamp on the property of Mr. H. Doman, but as clearing was being undertaken around the swamp and it was reported that the owner intended to drain out most of the water it was decided to take no action until these activities had been discussed with Mr. Doman, who is at present overseas.

In the evening the party attended a public meeting in the Weld Hall, Busselton. The meeting had been called to discuss a petition signed by over 160 local residents who had signified their desire that the Vasse and Wonnerup estuaries be opened to duck shooting. Representatives of the signatories and of local residents opposed to the petition debated the pros and cons of the subject. At the conclusion of the debate Mr. Fraser and Major Whittell replied to queries and addressed those present on the purposes and activities of the Committee, and gave an assurance that all views expressed would be considered before making any decision. A request was also presented that a section of the Capel River be closed to duck shooting.

Next morning an inspection of the estuaries in dispute was carried out by the Committee and the

party proceeded to Donnybrook. A meeting was held with members of the Preston Road Board and the Board's recommendation that the Preston River be closed to the shooting of all wild game was discussed. The opportunity was also taken to examine the kangaroo problem and it was decided to include the Preston District in the area of the open season.

The party returned to Perth on May 29 after calling on Mr. Angus Robinson of Coolup on the way.

MODERN EQUIPMENT FOR "LANCELIN"

In order to facilitate "Lancelin's" programme of investigation, a hydraulic winch has been purchased by the Department from the Raymond Hydraulic Transmission Co., of Melbourne, at a cost of approximately £720 ex works. The pump is driven at a constant speed of 720 r.p.m. from the vessel's main motor, controls being located in the wheelhouse, and the winch has a lifting power of 3,100 lb. Two winding drums and two gypsies have been provided with separate clutch and brake for each. The winch will be used for weighing anchor and for warping in trawls, pulling craypots, etc., and will very greatly increase "Lancelin's" efficiency.

An A.W.A. Marconi echosounder, purchased by C.S.I.R.O. at a cost exceeding £500, is also being installed. The sounder, which sends out impulses and records depths, has been made available to the Department on loan. By pre-determining the nature of the sea bottoms by using the sounder, the saving in nets should be considerable and the investigational programme greatly facilitated. The Department is most grateful to C.S.I.R.O. for its kindly gesture.

As soon as the new equipment has been fitted and fully tested, "Lancelin" will sail for Shark Bay and Exmouth Gulf to continue the prawn-trawling survey.

PORT GREGORY

Inspector Bowler has submitted a report in relation to this area, which is situated some 60 miles by road north of Geraldton. As it is possible other inspectors may at some time be asked by fishermen for information concerning the locality, Inspector Bowler's views may be of interest and assistance.

He says crayfishing has been quite good over the past three months, and the five men working there (they operate four boats between them) have produced a total of about 8,000 lb. of crays a month. Each boat is working about 20 pots.

One boat, "Garnet", operated by one of Geraldton's most successful fishermen, W. Burton, who is chairman of the local co-op., has in addition made several good catches of snapper, jewfish, spanish mackerel and groper, and two smaller boats have had proportionately good catches. Although mullet and whiting are fairly abundant on the beaches, very little netting has been done.

Mr. **Bowler** says the road from Northampton to Pt. Gregory (about 30 miles) is quite fair despite the rains, and he is at a loss to understand why more fishermen do not operate in the area. The road from Geraldton to Northampton is bitumenised.

PROCEDURE WHEN MAKING SEIZURES, ETC.

There still appears to be some doubt, particularly among the newer inspectors, as to the correct procedure to be followed when seizing nets. The following brief hints could well be committed to memory so that they may be followed in their correct sequence.

1. Say to the person concerned - "My name is I am an inspector of fisheries. This card which I produce to you is evidence of my authority." These remarks should be made in all cases, even if the person with whom you are dealing knows you well.

2. If you are about to seize a net in closed waters, say "You are using a net in closed waters. I must seize the net." While this is going on the inspector writes in his note book facts which may be needed in the event of prosecution, e.g., day, date and time (a.m. or p.m.); exact location where offence committed; weather conditions (bright, dark, raining, etc.); approximate distance from boundary of closed waters; how much of net is in the water, how much in the boat or on the shore; approximate number and species of fish in net and in boat.
3. Say "What is your full name and address?" This question must be asked whether you know the offender or not. You must secure the offender's full name, not a nickname like "Tom", "Bill", "Art"; initials are worse still. You must make sure, if the offender's residence has a street number, to secure that number. Write all these things in your note book.
4. Seize the net. If the owner hinders you, or obstructs you; say to him, "I would not do that. I have the authority of the law behind me, and if you obstruct me in any way, you stand a chance of being prosecuted on that charge too. The penalty is a heavy one."
5. Write in your note book anything the offender may say which will strengthen your hand in Court, especially any admissions. Also ascertain whether the boat has a number: if so, write the number in your book; if not, write that fact down.
6. If offender appears to be young, ask him to tell you and write down his age.
7. During the course of proceedings the offender should be engaged in conversation, and questions put which may elicit information of use in Court. Any answers which are relevant should be written down.

8. Finally, and most particularly, always and in all circumstances remember the Fisheries Inspectors' Golden Rule - "Be courteous; speak quietly; don't lose your temper".

MOTOR MILEAGE RATES - NEW INDUSTRIAL AGREEMENT

The Public Service Commissioner has advised that he has reached agreement with the Civil Service Association in relation to an increase in the mileage rates payable for the use of private motor vehicles on official business.

The new rates, which are to have retrospective application to July 1, 1952, are set out in the table below (the figures in brackets indicate the amount by which the new rates respectively exceed the old rates).

Area	Mileage travelled each year on official business					
	1-5,000		5,001-10,000		Over 10,000	
	Over 12 h.p. d.	Under 12 h.p. d.	Over 12 h.p. d.	Under 12 h.p. d.	Over 12 h.p. d.	Under 12 h.p. d.
Metropolitan	9.1(1.7) per mile	7.4(1.5) per mile	6.3(0.9) per mile	5.2(0.9) per mile	5.3(1.0) per mile	4.2(0.8) per mile
S.W. Land Division	10.7(1.9)	8.7(1.7)	7.9(1.1)	6.5(1.1)	6.9(1.2)	5.5(0.8)
Other	11.5(2.1)	9.3(1.9)	8.7(1.3)	7.1(1.3)	7.7(1.4)	6.1(1.0)

As the Commissioner has directed that all claims affected by the amendment be adjusted and paid before June 30, claims for officers to whom additional payment is due for the period July 1, 1952-May 31, 1953, have been prepared in Head Office and forwarded to the Treasury. Claims for June mileage should be based on the new rates.

RUFF MIGRATIONS

Two more ruff which had been tagged and liberated at Ceduna in June, 1952, were recovered in Western Australian waters during June of this year. One was caught at Yallingup and the other at North Mole, Fremantle.

WILD DUCK BANDING

Two more duck bands (1958 and 1961) were returned to the Department during June. They were both taken from black duck said to be shot at Chittering "early in May". They were both banded in Queen's Gardens, Perth, by Warden Traynor on May 5, 1953.

The wild duck open season concluded on May 31, and their taking by any means is now prohibited until just before Xmas.

MID-YEAR INSPECTORS' CONFERENCE

The mid-year conference of district inspectors and other senior departmental personnel, to which reference was made in the last issue, was held at Geraldton between June 3 and 6. The officers mentioned in the June number were all present.

In addition to discussions on departmental matters, inspections were made of local processing establishments and the like, as well as of localities of importance in the fishing industry.

The following is a brief resume of some of the subjects dealt with -

Breaches of Acts. It was agreed that from time to time in the Bulletin notes be published concerning the procedure to be followed when inspecting catches, seizing fish, nets, etc., or apprehending offenders.

Amendments to Act. It was agreed that the existing law required overhauling, particularly in respect of the seizure of illegal gear, or gear used illegally, where inspectors' powers should be increased.

Weekly Diaries. It was agreed that inspectors' diaries should contain more detailed information in relation to their activities and of happenings in the industry - senior officers to suitably instruct the younger men working with them.

Lights on Fishing Boats. It was decided that the question of fishing-boats in estuaries and on rivers being compelled to carry a light with an all-round visibility of not less than 100 yards be taken up with the Harbour and Light Department.

Typewriters for District Inspectors. Several officers drew attention to the need for typewriters in district offices. Upon being advised by the Superintendent that it was unlikely that the Treasury would provide funds for this purpose, it was agreed that an approach be made to the Government to purchase machines for use by officers under hire-purchase conditions.

Permanent Assistant Inspector for Geraldton. It was pointed out that the volume of work in the Geraldton district had increased to such an extent that it was impossible for one man to carry on alone. Young inspectors had been sent to Geraldton from time to time to assist, but this was considered unsatisfactory. The Superintendent was asked to consider the desirability of permanently locating an assistant inspector at that station.

Fish Traps, Abrolhos Islands. It was reported that vast quantities of undersize crayfish were broken up and used as bait in fish-traps, the fish so caught being in turn used as bait in craypots. It was stated that an abundance of meat was available in Geraldton as bait for the pots, and it was agreed that an approach be made to the Minister with a view to prohibiting the use of fish-traps.

Cadet Inspectors. The question of extending the system of cadetships, by bringing into the

Department in all future cases young men as cadets instead of mature-age assistants, was discussed at length, and although there was not complete agreement, the majority of officers considered this the better method of recruitment.

Motor Mileage. The Superintendent emphasised that in view of the Government's strained financial position it would be necessary next financial year to reduce expenditure on mileage for the use of officers' private vehicles. At the same time he stressed that there was no desire to cut down necessary running. He felt that at times some unnecessary running was indulged in. Sometimes, he said, public transport was every bit as convenient as car, and considerably less costly, and in cases where an officer merely ran from one town to another and back again, mileage would not be paid if suitable public transport were available and the time-tables fitted in. He said he had instructed the Clerk-in-Charge and Supervising Inspector to scrutinise all claims very carefully, and not to hesitate to use the blue pencil if they felt such a course justified.

Purchasing Goods without Authority. The Superintendent stated that too many local purchases had been made without head office authority, and in circumstances which did not justify departure from established policy. In all future cases, he said, except when it was essential for efficient working to purchase some article locally, unless head office approval were first obtained the officer would be required to foot the bill himself.

Shark Bay Station. The Superintendent indicated that doubts existed in certain quarters as to the necessity for a full-time inspector at Shark Bay. After full discussion, during which opinions were expressed by several officers with a knowledge of the Bay that much of the criticism of the local inspector was inspired by people whose conduct he had had to call in question, and that there was something in the nature of a "whispering campaign" being organised by local residents, it was resolved to recommend to the Department that the station remain open.

Headquarters Metropolitan District. It was agreed that an office be established at the Causeway boatshed as the headquarters of the metropolitan inspectorial staff.

Mr. E. J. Brownfield. The conference decided to place on record the appreciation of the inspectorial staff of the assistance rendered to them by Mr. E. J. Brownfield while he was clerk-in-charge.

Congratulations. The conference congratulated the Superintendent on his recent elevation to the status of a permanent head, and on the award to him of the Queen's Coronation Medal.

The officers present are deeply grateful to Mr. and Mrs. Bowler for their thoughtfulness and co-operation during the period of the conference. On the last night in Geraldton both were entertained at dinner at the Victoria Hotel and a presentation made to Mrs. Bowler as a token of appreciation.

CRAYFISH PRODUCTION

The following comparative production figures are interesting -

(a) Abrolhos

1951 (April-May)	1,023,422 lb.
1952 (do.)	838,182 lb.
1953 (March-May)	1,203,737 lb.

(b) Lancelin-Cervantes

1950-1 (whole season)	3,415,502 lb.
1951-2 (do.)	4,213,378 lb.
1952-3 (do.)	2,700,311 lb.

(c) Fremantle

1950-1 (whole season)	1,684,728 lb.
1951-2 (do.)	2,006,500 lb.
1952-3 (do.)	2,295,369 lb.

THE RIVER OR SEA MULLET OF WESTERN AUSTRALIA

By A. J. Fraser^{*}

INTRODUCTION

The fishery on the river or sea mullet of Western Australia, unlike that of New South Wales and Queensland, is by no means the major inshore fishery, but from the point of view of the estuarine fishermen of Perth, Bunbury and Mandurah, it provides what they regard as their chief "bread-and-butter" line. Although the annual mullet catch in the last ten years has never exceeded 11% of the total catch of wet fish (as against roughly 40% in the two States mentioned), the fishery is nevertheless of such importance economically as to warrant the attention paid to it in the past by the Department and the Division of Fisheries, C.S.I.R.O.

In the preparation of this necessarily brief paper I have been assisted by Dr. D. L. Serventy, now of the Wildlife Survey Section, but formerly of the Division of Fisheries, C.S.I.R.O., and Mr. J. M. Thomson, of that Division, who have written portions of the text. I am greatly indebted to both. Mr. Ivan R. Berry, Chief Draftsman of the Mines Department, W.A., was responsible for drawing the map.

THE FISH

The family Mugilidae, or "Grey Mulletts", to which the River or Sea Mullet (Mugil dobula) of Western Australia belongs, has numerous species inhabiting the coastal waters of the temperate and tropical zones. They chiefly frequent brackish waters, where there is abundant food consisting principally of organic matter mixed with sand or mud. The grey mullets have, as a modification of the pharyngeal organs, an apparatus by

^{*}Superintendent, Fisheries Department, Western Australia.

which the food is filtered from the sand and mud, which are finally ejected. About thirty species are found in Australian waters. Many people regard them as perhaps the choicest table fish in local waters. They certainly stand high in popular esteem.

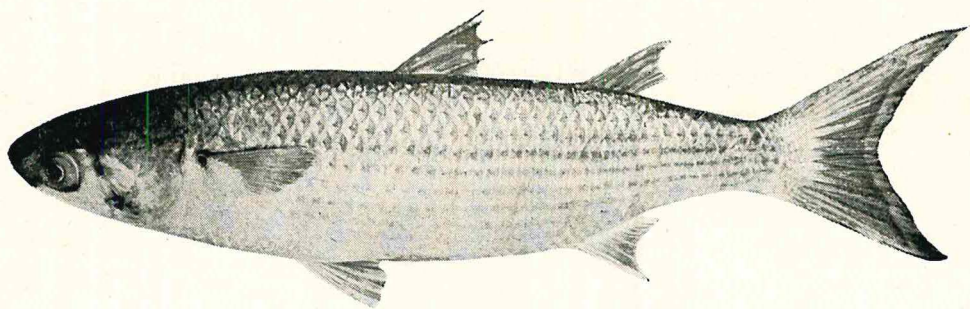
According to Kesteven, Mugil dobula in Western Australia, where Günther secured his type specimens, does not differ in any significant way from the eastern Australian species, but recent raciation studies suggest that there are at least certain racial, even if not specific, differences. This is admitted by Kesteven, who is prepared to concede that the eastern stocks may comprise two or more races. J. M. Thomson, in a private communication, suggests that the Australian species is Mugil cephalus. He says that examination of specimens of M. cephalus from the Mediterranean, South Africa and Japan shows there is no recognisable difference between them and M. dobula.

In Western Australia mullet is certainly not as abundant as in the rivers of New South Wales and Queensland. No doubt this is due largely to the smallness of our river systems compared with such systems as the Richmond, Clarence, Hawkesbury and Shoalhaven, and our complete lack of large coastal lakes like those of Tuggerah, Macquarie and Illawarra.

The estuaries, shallow bays, and sea beaches are the home of the mullet. They depend for their food upon these shallow waters owing to their specialised requirements. During migrations they may move well out to sea, but they cannot survive there - at least in large numbers. Mullet cannot feed on active animals. Only the estuaries and shallow seas supply in quantity food of the kind they require. Algae do not grow in deep waters, and detrital material, i.e., small pieces of plant and animal bodies broken up in the process of decay, is common only near land.

As the estuaries and shallow bays, such as Shark Bay, are limited in number and extent, it follows that there is a definite limit to the quantity of mullet that can be fed on these grounds. Other kinds of fish and many sea-creatures compete for the same food.

But besides the limitations of food, limitations



RIVER OR SEA MULLET
(*Mugil dobula*)

of space restrict the stocks. The typical life of mullet is as follows:- the young fry enter the bays and estuaries from the sea from August to November and gradually spread over the shallows and up into the rivers. Within a month or so some have even penetrated to fresh water; but most of them stay in the lower reaches. In the second year, their distribution is much the same. Tagging indicates that although some fish move from the estuaries upstream others move down, so that a more or less even balance in numbers is maintained between the estuary and the river. Floods drive many river mullet downstream, but otherwise there is always some population of first and second year fish upstream. In the third year most of the large fish live in the fresh water until late summer. Then as autumn approaches they appear temporarily in the estuaries as they head for the sea on their spawning migration.

In Western Australia only the lower sea-invaded estuaries are permanent in extent. Most of the rivers cease to flow each summer, and the fresh water zone becomes a string of isolated pools. In pools which remain deep enough to escape attention from predatory birds mullet can live; but compared with the fresh waters of eastern Australia only very few can be accommodated here. What happens to the surplus fish which normally would enter the fresh waters? The second year fish remain in the estuaries, but the third year fish do not - otherwise they would be caught there. They do not die off - otherwise the death of so many fish would not go undetected. There remains only escape to the sea. It is believed that the large schools of mullet in Shark Bay and Exmouth Gulf are made up from migrants from the rivers of the South-West, though this has yet to be proved. While large numbers of mullet have been tagged in the South-West, none have yet been returned from Shark Bay. However three fish tagged in Leschenault Inlet (Bunbury) have been recaptured on the beach at Geraldton.

Mullet spawn for the first time at a length of approximately 12 inches. At the end of the first, second and third years they have grown to 4 inches, 8 inches and 12 inches respectively. By now they have left the estuaries. After spawning, the growth rate slows down and the fish reach 14 inches in the fourth year and 16 inches in the fifth. On their spawning run

mullet swim north against the prevailing southerly oceanic current, and somewhere at sea spawning takes place. For some weeks the eggs and young fish drift southwards with the current and eventually when an inch or more in length the fry enter the rivers, attracted perhaps by the current or by the lowered salinity or by traces of good food.

The young are even attracted by seepage through sand-bars. When streams such as the Greenough River near Geraldton or the Salt River east of Albany open (usually only for a very short time) small mullet can be seen crowding in through the gutters formed in the bars. The bars which are mostly in remote localities frequently open and close unobserved, and this has led to the belief that mullet have spawned in the barred estuaries. This belief cannot be supported by any available evidence.

What is the complete picture then? Commercially the sea mullet provides a relatively low level fishery, limited by the extent of suitable feeding grounds, and by limitations of space. The stocking of the estuaries may be a matter of some chance depending upon the arrival of schools of young mullet outside their mouths while some discharge is occurring to attract the young fish inside; or upon the opening of the bar when the small fry are outside.

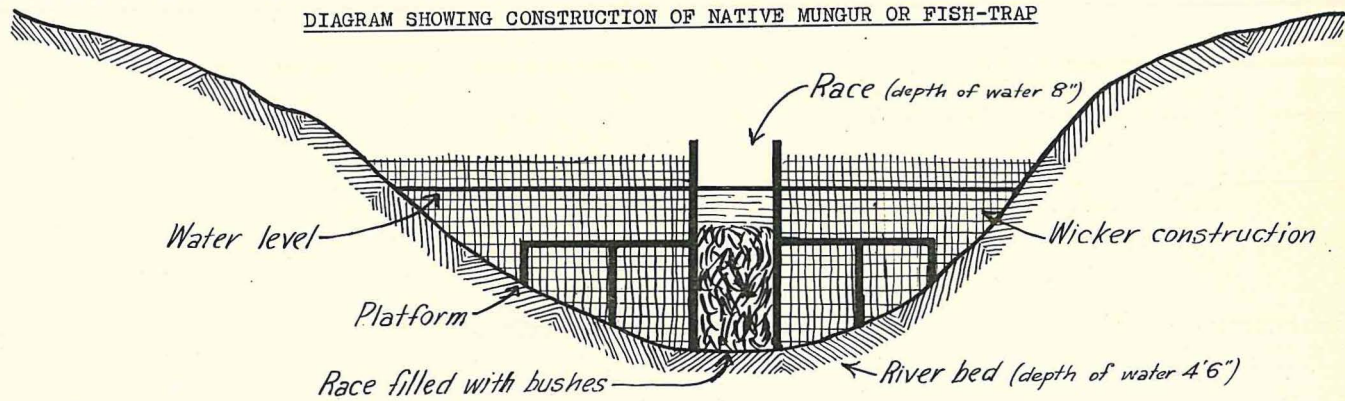
THE FISHERY

(a) Yesterday

There is no doubt that mullet formed a very important part of the diet of the south-western natives in pre-settlement days. Their "mungur" or fish-trap in the Serpentine River and elsewhere was in regular use up to the 'seventies, although it functioned more or less spasmodically until the end of the century. As a matter of fact, it is only during the past year or two that all traces have been removed in the course of river improvement works upstream of Barragup.

An excellent description of the mungur is given by J. E. Hammond in "Winjan's" People! I take the liberty of quoting it verbatim, as well as of reproducing the diagram which accompanies it. The diagram is opposite.

DIAGRAM SHOWING CONSTRUCTION OF NATIVE MUNGUR OR FISH-TRAP



(After Hammond)

Hammond writes - "The natives' chief method
"of catching fish was by a mungur, or fish trap,
"which was constructed by them every year for the
"purpose. The last time I saw this method used was
"in the 'seventies.

"To make this trap they chose the narrow
"neck of the river, at Barragup on the Serpentine,
"where the water was up to about four feet in
"depth. They constructed the trap every year in the
"same place and I never knew of their building
"one elsewhere in the South-West. A wicker fence was
"built across the stream, completely closing it from
"bank to bank, except in the centre, where a small
"opening was left. Through this opening a race was
"constructed by driving two parallel rows of stakes
"in the river bed. The bottom of this race was
"filled with bushes, until there was only about
"eight inches of clear water above the bushes for
"the fish to swim through. On either side of this
"race was built a platform, about two feet six
"inches below the top of the water. On these
"platforms the natives stood to catch the fish
"as they swam through the race. The fish were
"caught by hand as they passed over the bushes and
"were thrown to natives who were waiting on the bank
"to receive them.

"At Barragup, the natives always met at the
"commencement of winter to catch the fish that were
"forced down the stream by the fresh water. Some
"half a dozen men and women would stand on either
"side of the outlet in the centre and the fish
"would be thrown out in thousands. Hundreds of
"natives from the eastern and northern districts,
"as well as from the South-West, would gather there
"to live on them. What they could not eat they
"threw back into the river after the fish had been
"dead two or three days. They were very superstitious
"about letting any fish escape, for they thought that
"if one got away it would tell all the others and
"they would not go into the river again.

"The settlers used to go to buy fish from
"the natives at Barragup; and I have seen them
"get a cartload of fish for a few pounds of flour
"and tea and sugar and a couple of three-penny
"sticks of tobacco. The fish was often used to

"manure the fields.

"The natives also caught fish by wading in the shallow water and stabbing them with the 'gidgee', a long and heavy spear."

One or two other references to the mungur might well be mentioned.

Lindsay Thompson, in his "Report on the Marine Fisheries of Western Australia", 1898, says, "I ought not to omit a reference to that very destructive engine for fish capture constructed by the aboriginals: I mean the mungah which is erected across the Serpentine River near the bridge.....".

Charles Tuckey, who operated a fish cannery at Mandurah, said in evidence before the Joint Select Committee in 1906 - "About 10 years ago at the native weir at Barragup I filled 10,000 tins of fish in six weeks (Barragup is on the Serpentine in the area closed after 1898)."

The Barragup mungur was destroyed about 1897 by some of the white fishermen, but the natives and some of the whites protested. In "The West Australian" of October 19 of that year is a report of a visit to the spot by the Governor (Sir Gerard Smith), to whom the local natives appealed for the restoration of the mungur. The report states, inter alia - "In the old days they (the natives) ate as many (fish) as they could and traded cartloads of them to the settlers, in barter for tobacco, to be salted down, but Billy Dowers' modern method is to sell the fish to the preserving factory at the trade rate of the fishermen, hence his statement that the sacking of the weir had prevented him and his compatriots making a living".

In addition to that operated by the Charles Tuckey mentioned above, other canneries were established in the Mandurah district for the canning of mullet. Robert Smart had developed a profitable little business, but he claimed that the closure of the Serpentine and other rivers in 1898 to commercial fishing had ruined his enterprise and he sought financial assistance to remove his plant to Shark Bay. Another cannery was conducted by the Dawe family on the shores of the Harvey estuary in the early 1900's. All three went out of business many years ago.

(b) Today

Strictly speaking there is not a mullet fishery in Western Australia today; but in our estuarine fisheries the mullet does play an important part. Nevertheless, we are accustomed to speak somewhat loosely of the snapper fishery, or the salmon fishery, or the mullet fishery, to include the area or areas in which snapper, salmon or mullet are found and fished, as well as the operations by which they are taken. It is in that sense that we use the term now.

In the eastern States there is a two-phase fishery, on the coastal beaches and in bays during the "travelling" season (i.e., the period during which the spawning migration occurs) and in the estuaries and rivers in the non-travelling period. To a lesser extent the pattern is the same in Western Australia, although the coastal fishery is of secondary importance only. The great bulk of the catch (see Production Table, page 190) is made in the three main estuaries - Swan River, Peel Inlet and Leschenault Inlet - and in Shark Bay.

In the estuaries the main methods of net-fishing in vogue are "hauling" and "setting". In the former method a net is shot in a circle around a school of fish, one end of the net having first been made fast to a rowlock or thwart of the boat. The free end is then slowly brought inboard, and the fish removed from the net as it comes over the gunwales. Bringing the net aboard without removing the fish as it comes in - commonly known to fishermen as "holus-bolusing" - is prohibited by the regulations, insofar as it does not facilitate the return of undersize fish alive to the water. "Setting" is usually performed at night by placing the net loosely in the water, the cork-line keeping the top of the net on the surface and the leadline keeping the bottom down. The net is set in a place which fish are known to frequent, and they become "meshed" or "gilled" when they come in contact with the net. Most frequently a net is lifted at intervals during the night and the catch removed - sometimes it is set all night and not lifted until the following morning.

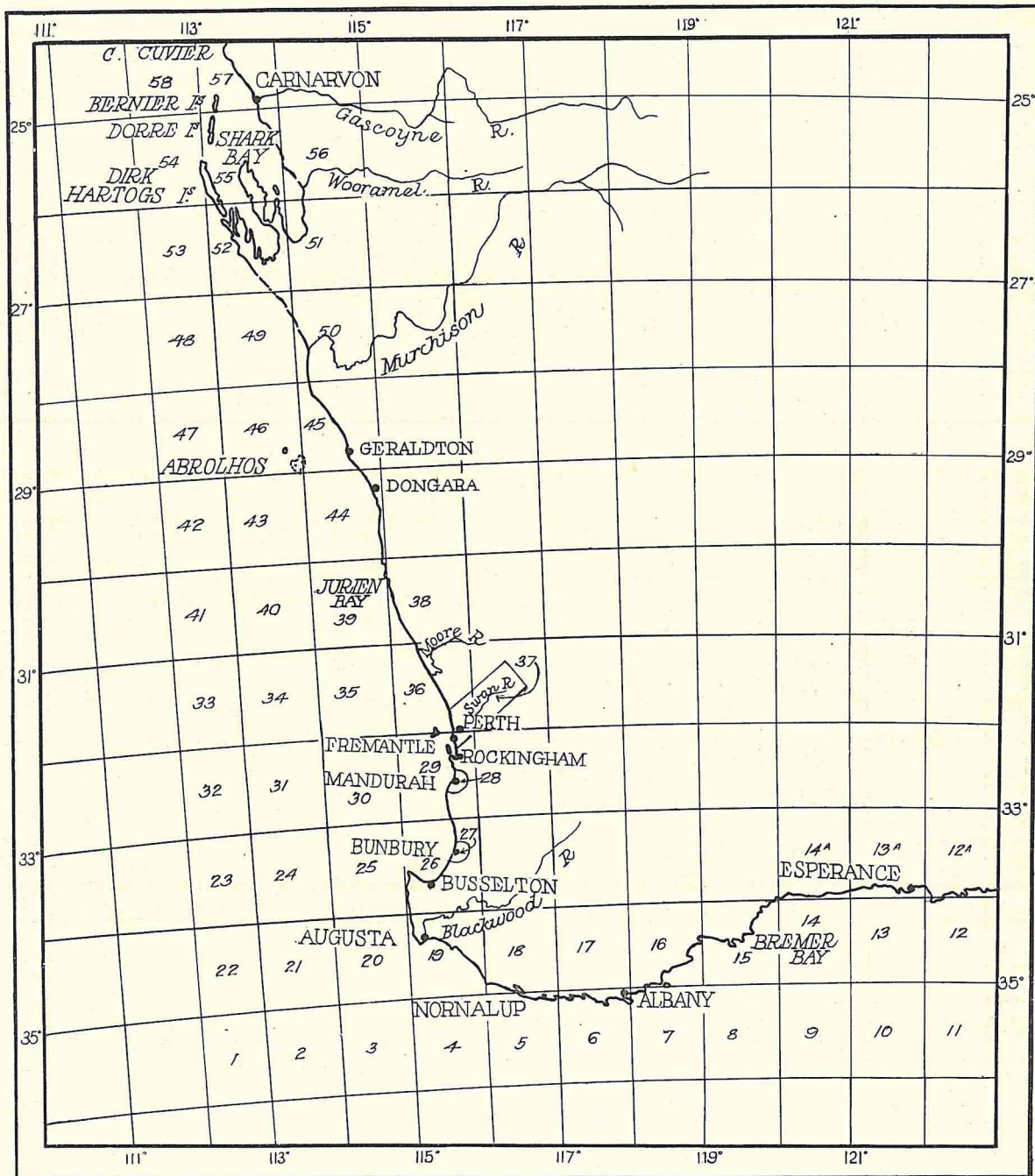
At Shark Bay setting is the means generally employed, although fish are occasionally caught by

MULLET (Mugil dobula) PRODUCTION, WESTERN AUSTRALIA, 1943-1952

Block No. +	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
5	440	30	1,137	162	126	554	1,255	1,717	1,849	554
6	5,485	5,090	8,415	5,759	14,975	6,891	12,645	11,308	13,421	12,274
7		380								2
12					120	1,740	740			
13	1,216	88	100		4,359	1,685				
14		88	953	8,200		8,163		667		160
15		6,841	12,225	27,833	43,529	42,368	23,858		4,190	2,793
16	600	910	151	149	1,042	510		1,039	3,272	326
17	1,878	7,290	8,021	3,078	12,892	6,048	6,698	11,526	15,568	10,580
18	276	50	41	67	1,044	1,090	128			
19	8,031	9,520	10,403	11,190	14,798	10,637	10,348	10,799	8,308	9,956
25							20			214
26	2,157	392	1,476	2,678	1,486	5,380	1,982	8,777	3,189	8,203
27	6,980	9,165	18,355	10,303	52,389	48,443	77,110	67,599	32,923	36,615
28	23,310	27,139	92,949	38,274	44,753	57,389	96,791	114,017	146,908	141,387
29	6,294	5,113	8,171	4,050	9,004	9,523	9,369	6,703	5,470	9,388
30										60
36	18,940	10,235	13,522	1,593	8,462	4,654	5,078	7,444	10,467	9,939
37	21,938	11,695	23,064	22,399	41,931	53,538	40,728	53,366	85,249	45,767
38			145	290	1,328	474			500	
39		157		56	300					
44	906	160	740	150	200	940	420	250	150	677
45	208	1,314	2,477	4,071	64	1,721	712	972	4,301	15,700
46	170	1,254	1,898	1,732	204					2,629
49							361			
50	2,220	1,020	1,034	6,256	17,309	6,191	3,582	4,393	7,349	3,255
51			4,766	48,093	3,577	3,257				
52	855	2,137	2,443	72,919	117,171	45,568	22,699	56,050	48,201	59,083
53	154		216						2,239	
54	1,103	1,965	1,290					1,232	2,508	
55	87,087	86,176	78,996	190,418	296,996	221,182	95,065	112,528	122,364	146,348
56		520	2,991	82,184	46,372	11,588	5,120	1,400	9,840	2,003
57			17,496	25,845	9,102					6,701
N.W. *			4,202	7,307	29,433	402	6,500	771	32,595	5,376
Totals	190,248	188,769	317,677	575,056	772,966	549,936	421,209	472,558	560,861	529,990

+ These block numbers refer to the numbered squares on the map opposite.

* Signifies areas north of block 57.



seining on the banks. This method is also adopted on sea beaches, while the waters beyond the surf zone are usually fished with set nets.

Mr. J. E. Munro, Metropolitan Inspector, has set down some of his observations in regard to the mullet which should be placed on record. He says -

"It is a well-known fact that after a succession of easterly winds, particularly during January and February, mullet leave the Swan and Canning Rivers for the sea. These fish range from 8 to 12 inches, and are netted at Scarborough and adjacent beaches each year. At the same time mullet are fished at Hamelin Bay (just north of Cape Leeuwin), North Beach (Bunbury) and South Beach (Fremantle).

"On all these beaches large schools appear in midsummer, generally moving northwards. The significant fact about these migrations is that the mullet at Hamelin and Bunbury are mostly of a large run - from 14 to 18 inches - which coincides with the run of fish inhabiting the inlets and rivers of the south coast. On the other hand, all fish taken on the metropolitan beaches are of a similar size to those which move out of the Swan. Sometimes in a good season large quantities of mullet are caught on the beaches between Scarborough and Trigg's Island, by the use of short nets (70-90 yards) of 2 $\frac{1}{4}$ " mesh - these are used by the method of 'meshing'. Very often no boat is used, but the fisherman wades out into the surf ahead of the school with the net on his shoulder, and pays out the net as he wades in a half-circle. Primitive as this method appears, it is the most effective. Beach seines are not as effective on our beaches as the meshing nets described."

The west coast estuaries are probably fished almost to capacity for mullet. Shark Bay could possibly support double the present number of fishermen. To the north of Shark Bay, the river or sea mullet is gradually supplanted by tropical mullets of similar appearance. East of Albany the catch of mullet has declined to negligible proportions since salmon fishing began a few years ago.

CONSERVATIONAL MEASURES

The upper waters of the Swan and Canning Rivers had been closed to commercial fishing since 1889, but the first closure affecting the rivers and lakes in the Mandurah area (Murray and Serpentine Rivers) and the rivers flowing into Leschenault Inlet (Collie and Preston Rivers) was not gazetted until 1898. This was done on the recommendation of Chief Inspector Lindsay Thompson, who believed these waters were the spawning grounds of mullet and other fish.

The fishermen strongly opposed these measures and it is evident from departmental files and the Press of the time that the closures interfered with a settled custom. A petition dated June 20, 1899, addressed to the Minister for Lands by some of the fishermen and fish "preservers", drew attention to the great hardship which had been caused by the restrictions at Mandurah, and urging that the closure be confined to two months in March and April, the supposed spawning time. The petitioners asked that in the proposed ten months open season "the rivers be thrown open to net fishing with nets of not less than $3\frac{1}{2}$ inch mesh, which will not capture fish of a smaller size than $1\frac{1}{2}$ lb.

Departmental records show that the mesh consistently used for the capture of mullet in the three west coast estuaries was $2\frac{1}{4}$ inches. In 1911 this mesh was proclaimed for Bunbury, and prevailed until 1931, when an increase to $2\frac{1}{2}$ inches was effected. Subsequently, after it became apparent that $2\frac{1}{2}$ inch mesh did not enable fishermen to earn a livelihood, the mesh was reduced to $2\frac{1}{4}$ inches, which is the prescribed minimum today (except for "setting" for mullet, when the minimum is $2\frac{1}{2}$ inches).

In the Mandurah district the first minimum mesh was prescribed in 1914, when a "mullet net" was proclaimed with a mesh not less than $2\frac{1}{4}$ inches. This still remains operative, except for mullet set-nets, in respect of which $2\frac{1}{2}$ inches is the minimum permitted.

The Swan River has seen many changes in the size of mesh prescribed. In 1898 the minimum was fixed at 3 inches; this was reduced to $2\frac{3}{4}$ inches in 1901. The mesh was in 1907 further reduced to $2\frac{1}{2}$ inches,

and in 1921 to $2\frac{1}{4}$ inches. This is the present minimum, except that here as well $2\frac{1}{2}$ inches is the smallest allowed for set nets for mullet.

Prior to 1900 the minimum legal weight of mullet was 4 oz., representing an overall length of approximately $8\frac{1}{4}$ inches. Subsequently this was increased to 6 oz. (approximately $9\frac{1}{2}$ inches), and a little later it was reduced to 5 oz. with a length of about 9 inches. Minimum weights were replaced by minimum lengths in 1913, when the standard of $9\frac{1}{2}$ inches was adopted for mullet.

When in 1940 and 1941 he was working on the mullet fishery of eastern Australia, Mr. G. L. Kesteven, of the C.S.I.R. Division of Fisheries, was provided with a series of length measurements of mullet made at the Perth market. He subsequently reported that "the measurements mean that the proportion of spawning stock in this fish population is devastatingly low: in fact, it rather looks as though M. dobula could easily become exterminated from Western Australian waters". He urged that the Fisheries Department take steps aimed at conservation.

Somewhat alarmed by an authoritative expert warning, backed up by C.S.I.R., that the mullet fishery faced extinction, the Department took prompt action and increased the minimum legal length of the fish in March, 1942, to 10 inches, and in March, 1943, by a further 1 inch to 11 inches. Despite the urgent need for fish as food (World War II was then at its height), the Department considered that the preservation of the mullet fishery justified such extreme action, and rejected all overtures from the fishermen - and they were legion! - for reconsideration. The drop in mullet production as a result of the size increases was very sudden, though not totally unexpected, and it is estimated that some half-million pounds of fish were lost to the end of 1944, although the actual figure could in fact be much greater.

The fishermen, as has been stated, did not adopt the scheme without protest. They refused to accept Kesteven's depletion hypothesis, and petitions through members of Parliament and public bodies were almost unceasing. All concerned maintained that the

size of the mullet inhabiting the estuaries had always been small, from $8\frac{1}{2}$ to $10\frac{1}{2}$ inches, and that as they matured they either moved into the rivers or out to sea.

Towards the end of 1944 - no further increase, although originally intended, had been made during that year in the minimum legal length - Mr. E. J. Brownfield, the acting Chief Inspector, and Dr. D. L. Serventy, of C.S.I.R. Division of Fisheries, in view of the diverse opinions expressed by C.S.I.R. on the one hand and the fishermen on the other, decided to re-examine the evidence on which Kesteven had based his earlier findings. In a lengthy report they thoroughly reviewed the case, suggesting that Kesteven had gone astray in his interpretation of the measurement data, and that there was no proof whatever of depletion in the west coast estuaries.

Among the conclusions arrived at by Brownfield and Serventy were the following -

- (a) The various size groups of mullet had different habitat preferences, the main controlling factor appearing to be salinity; thus the series of inlets, estuaries and rivers in the south-west of Western Australia carried differing size-groups of mullet and were well-known to the fishermen as "big mullet" or "small mullet" waters, as the case may be;
- (b) It so happened that the great bulk of the Perth supply came from the "small mullet" waters of the Swan River and the Mandurah and Bunbury estuaries. Hence measurement data from such material comprised a biased sample, so far as assessing the condition of the mullet population as a whole was concerned, and was incapable of being used to support a depletionary hypothesis. The bigger mullet, whose absence caused such concern, did occur, but in other habitats, many of them legally closed waters;
- (c) Whatever statistics of production existed lent no support to the belief that the estuarine catch had fallen off, either absolutely or per capita, since the end of the last century.

at Shark Bay, suggesting that the estuarine and river phases of life are not obligatory, but simply to be preferred as sources of food.

So long as the large mullet at Shark Bay are not overfished, and provided the smaller estuaries are allowed to remain closed to netting so as to provide sanctuary for the smaller fish, there is little to fear from depletion. The catch of mullet in the Swan River has shown a drastic decline since 1910, but this is almost certainly due to the destruction of their feeding grounds as a result of river improvement schemes and dredging for shell for the local cement works.

If it should ever come about that the average length of mullet taken at Shark Bay drops from 16 inches as at present to, say, 12 inches, then the introduction of strong control measures will indeed be justified. Kesteven (1942) and Thomson (1953) place some stress on the fecundity of mullet, and it would appear that just so long as the present stock of brood females, each producing 25,000,000 eggs every year, remains in the area, there need be no misgivings about the future. At the same time year-to-year fluctuations may be expected in the estuarine catch, and a reduction in the take for a year or two is more likely to be due to accidents of the environment, such as floods, or dry seasons, or food shortages, or failure of the young fish to enter the estuaries, rather than an indication of depletion. Fish are not what they used to be, say the old hands! They never were!

MATERIAL FOR FURTHER STUDY

- Kesteven, G.L., 1941 Conserving the Mullet Catch.
W.Austn. Fish. Dept. Bull. 1
- , 1942 Studies in the Biology of Australian Mullet (1). Coun.Sci.Ind.Res.(Aust.) Bull. 157.
- Thomson, J.M., 1950 The Effect of a Period of Increased Minimum Length of Sea Mullet in Western Australia. Aust.J.Mar. Freshw.Res., 1., pp. 199-220.
- , 1951 Growth and Habits of the Sea Mullet (Mugil dobula Günther) in Western Australia. Aust.J.Mar.Freshw.Res. 2., pp. 193-225.
- , 1953 Status of the Fishery for Sea Mullet (Mugil cephalus Linnaeus) in Eastern Australia. Aust.J.Mar. Freshw.Res., 4, pp. 41-81.

The report concluded with a recommendation that the minimum length be restored to what it was prior to the inception of the conservation scheme, pointing out that the new statistical system inaugurated by the Department would detect any depletionary tendency which might occur in the future.

The evidence as a whole was considered by the Minister for Fisheries (Hon. A. A. M. Coverley, M.L.A.) and referred to the Chief of the Division of Fisheries, C.S.I.R. (Dr. H. Thompson) for his opinion. After consideration by and discussion at a staff conference of the Division of Fisheries, Dr. Thompson returned a finding "that it is possible, but that it is not proven, that the mullet fishery was in a badly depleted state in 1941". He said that it had not been shown that a high number of spawning fish was essential, but that it was desirable that the fishery be based on larger individuals.

In view of the verdict of "not proven", the conservation scheme was abandoned in October, 1946, and the minimum legal length of $9\frac{1}{2}$ inches re-established. It remains the same today.

RETROSPECT - AND PROSPECT

Looking back, and knowing what we know of the distribution pattern of mullet in this State (see pp 184-5), we can appreciate why the experiment of raising the legal minimum did not produce the anticipated results. The small mullet survived to a larger size as predicted, but by the time they could be taken legally, they were no longer in the estuaries. Presumably they helped to swell the schools of large mullet at the Abrolhos Islands, Shark Bay and Exmouth Gulf, unless there happens to be some hitherto undiscovered mullet haven somewhere at sea.

There remained the possibility that larger breeding stocks at sea might produce more young and so increase the number of smaller mullet in the estuaries. However, when the legal minimum length was again reduced the catches did not remain for long at a higher level than in earlier years. Possibly the estuaries cannot support more mullet than they do now; or maybe some only of the young produced at sea ever reach the estuaries. Certainly young mullet can always be found