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Vol. XIII, No. 9

September, 1964

STAFF NOTES

The Minister for Fisheries (Mr. Ross Hutchinson) accompanied by the Director, Mr. A.J. Fraser, and the Administrative Officer, Mr. B.R. Saville, will attend a conference of Commonwealth and State Fisheries Ministers in Melbourne on September 25. The Director and Mr. Saville will leave Perth by air on September 21 for Melbourne to attend the Commonwealth-States Fisheries Conference to be held before the meeting of Ministers, viz., on September 22 and 23.

During his absence in the eastern States Mr. Fraser will deliver a lecture to the field officers' training school at the C.S.I.R.O. Marine Laboratory, Cronulla, N.S.W. He will also discuss with Commonwealth officers in Canberra the proposed joint Japan-Australia tuna venture in the Indian Ocean. Before returning to Perth on October 5, Mr. Fraser will present a paper at a Tasmanian fishermen's seminar in Hobart.

* * *

As this State's nominee, Fauna Officer, H.B. Shugg left Perth by air on August 20, for Canberra to attend an Australia-wide conference to consider the establishment in Australia of a branch of the World Wildlife Fund, of which H.R.H. the Duke of Edinburgh is President.

* * *

Mr. G.E. Dixon and Mr. P.G. Yewers, of Head Office, commenced one week's annual leave on August 24. Officers who will start leave this month include Assistant Inspector J.T. Kelly (Geraldton) on September 7, Inspector A.E. Tanner (Lancelin) on September 14 and Assistant Inspector R.G. Lindsay (Perth) on September 21.

After having completed a major overhaul at Fremantle the p.v. "Dampier" skippered by Inspector A.T. Pearce returned to Geraldton on August 15. Inspector R. Smith assisted Inspector Pearce on the trip to Geraldton. Cadet Inspector K.P. Enright, whose promotion to the rank of Assistant Inspector has now been approved, has been appointed to assist Inspector Pearce on p.v. "Dampier". He took up his new position on August 24. We congratulate Inspector C.W. Ostle on his promotion to Inspector, Grade 2, as from July 24 and his subsequent appointment to the mobile patrol unit.

* * *

We welcome to Head Office staff Miss N.C. O'Meagher and Mr. P.W. Smith, who commenced duty on August 6 and 17 respectively. Miss O'Meagher occupies the position of senior typist formerly held by Miss M.P. Eadie, who resigned from the service on July 31. Mr. Smith has taken over the position on the clerical staff formerly held by Mr. G.C. Ferguson, who after serving the Department for some eight years, left on promotion to a post in the Education Department. We wish Mr. Ferguson every success in his new position. We also welcome to the field staff Mr. P. Carroll, who commenced duty as Assistant Inspector on August 28. Mr. Carroll will assist Inspector E.I. Forster on the p.v. "Vlaming".

PERSONAL PARS

We take the opportunity to extend congratulations to Dr. R.G. Chittleborough, of the Division of Fisheries and Oceanography, C.S.I.R.O., Perth on his recent promotion to the rank of Principal Research Scientist. Dr. Chittleborough is very well known in this State as Project Leader under the Western Fisheries Research Committee.

FISHERIES TRAINING SCHOOL

The Minister for Fisheries has again approved of three departmental officers attending the Australian fisheries school for field officers to be held over a period of three weeks commencing September 7, at the C.S.I.R.O. Marine Laboratory, Cronulla, N.S.W. Those selected are Pearling Superintendent, R.J. Baird, of Broome, Technical Officer N.E. McLaughlan, of Perth, and Inspector D.H. Smith, of Dongara.

ADDITIONS TO LANCELIN INSPECTOR'S QUARTERS

The Minister for Works has advised that he has approved of the letting of a contract for additions to official quarters of the Inspector at Lancelin.

SPERM WHALE QUOTAS ABOLISHED

Advice has been received from Canberra that the Minister for Primary Industry has decided that the quotas hitherto placed on the taking of sperm whales have been discontinued, and that whaling companies may now catch sperm whales in unlimited numbers. The restriction as to the minimum size is, however, still applicable.

NEW LOOK "FUR FEATHERS AND FINS"

With a great deal of envy our congratulations are extended to the Fisheries and Wildlife Department, Victoria, on the "new look" presentation of their monthly newsletter "Fur, Feathers and Fins".

Our counterparts in Victoria have now acquired a Gestetner 200 offset printer which besides printing ever so more efficiently and neatly than a stencil-type duplicator, can print in colour and also reproduce half-tone photographs.

SICK LEAVE THROUGH WAR-CAUSED ILLNESS

The Public Service Commissioner has determined that as from July 1, 1964, special provisions will apply to both permanent and temporary officers for sick leave through war-caused illness.

A maximum credit of 12 weeks' special sick leave on full pay may be accumulated after five years' service. An initial credit of 10 days from date of appointment is followed by an additional 10 days after each year of service up to and including service of five years.

Sick leave due to war-caused illness recognized by the Repatriation Department and supported by medical evidence may with the approval of the Public Service Commissioner be debited against the special credit even though normal sick leave credits may be available.

Service prior to July 1, 1964, will count when the special sick leave credit is determined.

Application for sick leave in accordance with this determination must be forwarded to Head Office in the usual manner.

LIST OF OFFICERS OF FISHERIES DEPARTMENT SHOWING CLASSIFICATION AND LOCATION AT AUGUST 31, 1964.

Name	Position	Classification	Location
Baines, T.B.	Inspector Grade 1	G-II-2	Perth(Mobile Patrol)
Baird, R.J.	Pearling Superintendent	G-II-3	Broome
Barker, E.H.	Technical Officer Grade 2	G-II-1/2	Perth
Bateman, A.J.	Fleet Maintenance Officer	G-II-2	Fremantle
Bowen, B.K., B.Sc.	Senior Research Officer	P-II-9/11	Perth
Bowler, S.W.	Fauna Warden	G-II-1/2	Perth
Bramley, J.E.	Supervising Inspector	G-II-5	Perth
Bray, R.	General Survey Hand	*	Fremantle(r.v."Peron")
Byleveld, H.B.	Clerk	C-II-1	Perth
Campbell, F.J.	Inspector Grade 2	G-II-1	Shark Bay
Cardon, I.L.	Assistant Inspector	G-VII-1/2	Albany
Carmichael, B.A.	Inspector Grade 1	G-II-2	Geraldton
Carroll, P.	Assistant Inspector	G-VII-1/2	
Casselton, C.W.E.	Clerk	C-II-1	Perth
Clarke, P.V.	Inspector Grade 2	G-II-1	Fremantle(p.v."Misty Isle")
Crawford, R.M.	Inspector Grade 1(Relieving)	G-II-2	Perth
Dixon, G.E.	Clerk	C-II-3	Perth
Duckrell, J.D.	Mate Research Vessel	G-II-1	Fremantle(r.v."Lancdin")
Emery, R.G.	Inspector Grade 2(Relieving)	G-II-1	Fremantle
Enright, P.K.	Assistant Inspector	G-VII-1/2	Geraldton(p.v."Dampier")
Forster, E.I.	Inspector Grade 2	G-II-1	Fremantle(p.v."Vlaming")
Fraser, A.J., J.P.	Director and Chief Inspector	A-I-5	Perth
Frizzell, L.R.	Fauna Warden	G-II-1/2	Perth
Gilfellow, Miss Helen M.	Assistant	G-IX	Perth
Gordon, D.P.	Inspector Grade 1	G-II-2	Albany
Green, A.V.	Inspector Grade 1	G-II-2	Perth
Hammond, E.R.	Inspector Grade 2	G-II-1	Bunbury
Hanley, G.	Assistant Inspector	G-VII-1/2	Mandurah
Harrison, P.W.	Cadet Inspector	G-VII-1	Perth
Haynes, C.R.C.	General Assistant	G-VII-3	Fremantle
Jeffery, G.C.	Inspector Grade 1	G-II-2	Mandurah
Kelly, J.T.	Assistant Inspector	G-VII-1/2	Geraldton

Lambert, P.M.	Cadet Inspector	G-VII-1	Perth
Lonanton, R.C.J.	Cadet Research Officer	+	
Lindsay, R.G.	Cadet Inspector	G-VII-1	Perth
Mackenzie, E.A.	Engineer Research Vessel	G-II-3	Fremantle(r.v."Peron")
McLaughlan, N.E.	Technical Officer Grade 2	G-II-1/2	Perth
Melson, A.K.	Senior Inspector	G-II-3	Fremantle
Morrison, K.D.	Cadet Inspector	G-VII-1	Perth
Munro, J.E.	Senior Inspector	G-II-3	Perth
Noble, G.D.	Assistant Inspector	G-VII-1/2	Perth
O'Meagher, Miss Norma C.	Typist	C-V	Perth
Ostle, C.W.	Inspector Grade 2	G-II-1	Perth(Mobile Patrol)
Pearce, A.T.	Inspector Grade 2	G-II-1	Geraldton(p.v."Dampier")
Powell, Miss Brenda G.	Assistant	G-IX	Perth
Price, B.G.	Cadet Inspector	G-VII-1	Perth
Riggert, T.L. B.Sc.	Research Officer (Fauna)	P-II-3/8	Perth
Rogerson, N.J.	Cadet Research Officer	+	
Saville, B.R.	Administrative Officer	C-II-8	Perth
Seabrook, C.J.	Master Research Vessel	G-II-4	Fremantle(r.v."Lancelin")
Shugg, H.E.S.	Fauna Officer	C-II-4	Perth
Simpson, J.S.	Technical Officer Grade 1	G-II-3	Perth
Slack-Smith, R.J. B.Sc.	Research Officer	P-II-3/8	Perth
Smith, D.H.	Inspector Grade 2	G-II-1	Dongara
Smith, P.W.	Clerk	C-IV	Perth
Smith, R.	Inspector Grade 2	G-II-1	Jurien Bay
Tanner, A.E.V.	Inspector Grade 2	G-II-1	Lancelin
Wallis, Miss Janine M.	Typist	C-V	Perth
White, J.W.	Master Research Vessel	G-II-6	Fremantle(n.v."Peron")
Willey, P.C.	Assistant Inspector	G-VII-1/2	Fremantle
Woods, Miss Violet M.	Library Assistant	C-V	Perth
Wright, D.	Mate Research Vessel	G-II-2	Fremantle(r.v."Peron")
Yowers, P.G.	Clerk	C-V	Perth

* Mr. Bray is a wages employee and as such is unclassified.

+ Messrs. Lonanton and Rogerson are full-time students in Zoology at the University of Western Australia and are brought on the staff only during the "long" vacation.

FIELD OFFICERS AND FISHERIES RESEARCH

This Department has in the recent past been calling more and more on its field officers to make observations and to collect specimens required by research workers. In some cases they have been asked to become part of research teams engaged in particular projects.

All fisheries research in Western Australia is performed on a co-operative basis. It is placed under the direction and guidance of the Western Fisheries Research Committee, which has been set up by the Minister for this purpose. One of the tasks imposed on the committee is the duty of integrating all such research, i.e., to ensure that there shall be no overlapping and consequent waste or misuse of effort and personnel.

Two of the members of the committee are Western Australian biologists of high repute. They are Dr. W.D.L. Ride, Director of the W.A. Museum, and Dr. A.R. Main, Reader in Zoology at the University of W.A. In addition, the membership comprises Dr. G.L. Kesteven, Assistant Chief, Division of Fisheries and Oceanography, C.S.I.R.O., Sydney, a fisheries scientist of world-wide experience and repute; Mr. C.G. Setter, Assistant Secretary (Fisheries) Department of Primary Industry, Canberra, who has represented Australia at many meetings overseas; Mr. A.C. Bogg, Director of Fisheries and Game, South Australia, a fisheries economist who has studied abroad; and Dr. R.G. Chittleborough, the committee's project leader, who is a Principal Research Scientist, Division of Fisheries and Oceanography, C.S.I.R.O., Perth. He has been present at a number of meetings of the International Whaling Commission, both technical and plenary, in different parts of the world. The Director of Fisheries (Mr. Fraser) is the committee's chairman.

Several instrumentalities are engaged in active fisheries research here. They are the State's own Fisheries Department, the C.S.I.R.O., the W.A. Museum, the University of W.A., and the Department of Primary Industry. The fact that there are so many has made it imperative that there be co-ordinated and integrated effort, and this has been achieved by means of the Western Fisheries Research Committee. It is a body which really "works".

Broadly, the scientific research now under way in this State is designed to assist in the preparation of plans for the management, regulation, development and conservation of our fisheries. It involves biological, geological,

sociological, economic and mathematical studies. It was found impossible for this Department, by reason of its small research establishment and meagre funds, to do all that. A call was therefore made for assistance, and the instrumentalities already named responded readily to the call.

As the members of field staff owe loyalty to the Department as their employer - and in actual practice the vast majority give loyalty to the last grain - they also owe loyalty to the research teams now doing so much for the State's fisheries. The well being of the fisheries is the Department's statutory concern and responsibility, hence regardless of whether these teams comprise officers from an outside organisation or officers of this Department, or both, they are, like the inspectors, working for the Department and the State. To them surely is due the same loyalty and wholehearted support as is given to the Department itself. We must be prepared, if the necessity arise, of going that extra mile to help them.

Recently, Dr. Kesteven wrote the foreword for a paper to be presented at the next Session of the Indo-Pacific Fisheries Council in Kuala Lumpur in October. It contains Dr. Kesteven's definition of fisheries science; it sets out the kinds of data required in the furtherance of fisheries science and some of the methods of dealing with the different kinds of data collected; and it describes the use to which such data are put.

Believing that it is at all times a salutary thing to set ourselves thinking, and at the same time to afford to ourselves the opportunity of elucidating some of our thoughts in relation to the need for statistics, the Director asked the author whether we might public his material. Dr. Kesteven readily and most graciously gave his approval.

Here is his foreword -

"Science is very largely a business of collecting, compiling, and analysing data, and this is especially true of science applied to the solution of industrial problems - as is fisheries science. For a host of reasons (not least of which is the development of the electronic 'brain') this business of data handling has in the past few decades exploded in a mushroom-like growth which is, without any doubt in my mind, of greater significance than any military explosion so far.

This generation will be remembered more for its development and use of computers, which made rockets and satellites possible, controllable and interpretable, than for its bombs.

Data handling is a matter of prime importance to stock assessment work which after all is an involved programme of population census. It is more involved because there are so many populations to be assessed, differing in size, composition, habitat and other respects. The data dealt with in this work fall into three major categories, differing in origin, nature and volume. These categories are:-

- (1) Data consisting of records of industrial operations (effort) and their result (catch), and of information on the equipment and manpower employed in the operations; fishery statistics.
- (2) Data resulting from systematic observations (length measurement, etc.) on individuals of resource populations; market measurements.
- (3) Data resulting from special, and generally limited, examination of a population, its individuals and its environment; experimental data.

Collection of data in this work began with the last of the categories with the records of naturalists and classical ichthyologists on where they have seen each species, on size and so on. Next began the collection of data in the second category; and only relatively recently have steps been taken to develop the third category for assimilation to the assessment programme.

Although fishery statistics of a kind have been collected in many countries for many years, it was not until recently that careful and professional attention has been given to the methods to be used for their collection, and to the rules to be observed in their recording. Fifty years ago Johan Hjort gave an account, based on contemporary statistics, of fluctuations in major European fisheries; and although in the 1920's

and 1930's fishery biologists recognised that they were seeking, through their samples, a picture of the composition of the stocks they were studying, it was not until the late 1930's that they explicitly recognized that their work involved a three- (or more) stage sampling programme of which the commercial catch was the first. Their sampling of the catch was the second, and sampling of these samples made the third. Even so the commercial statistics tended to be accepted on their face value, and it was not until after World War II that attempts were made on a broad scale to bring true vigor to these systems. Two things have lent force to these attempts. One was the break-through by Beverton and Holt in 1957 in setting up their model by which the dynamics of exploited populations could be displayed and measured. Their model required summary statistics (such as stock age composition, and mean size in the catch) from population sampling, and opened the way to wider and more intensive use of data of all three categories, but perhaps more for the first and second than for the third. The other determinative development has been the arrival of electronic computer equipment and growth of computer techniques which make it possible to handle vastly greater arrays of data and to make many kinds of analysis which could not have been attempted before.

These developments have meant a widening of the range of data accepted into the system and a great increase in its volume. They call for a new approach to the whole programme of measuring, observing, and recording, and to data storage and processing. The character of the work is now quite changed. Where previously single individuals painfully and laboriously measured fish whenever they could gain access to a catch, and often measured many times more than they needed to, now such measurements are made by teams according to systematic plans which aim at maximising the information yield from the operation and minimising its cost. Such work must be backed up by comprehensive and reliable recording of the commercial catch and the effort expended in its taking. It is no longer sufficient for an individual fisheries biologist to

search laboriously through untidy sets of indifferently kept industrial records in the hope of establishing an historical account of the growth of a fishery. Responsibility for collecting these statistics, and for working with industry to persuade it of the need for accurate and complete record (and to help it to make this record) has now shifted to specialist groups. In part this has happened because there has come a recognition that fishery statistics are not the private domain of fishery biologists, but are an informational base on which all fishery programmes stand.

With this growth in volume and complexity of data, and in the intricate pattern of relations between sets of data, it is important to maintain a clear view of the entire field and to develop efficient arrangements for the conduct of all these data operations."

WESTERN FISHERIES RESEARCH COMMITTEE

A special meeting of this committee was held from August 20 to 25, and as usual commenced with a technical session and concluded with a plenary session. However, the technical session at this particular meeting took the form of a workshop under the direction for the most part of Dr. G.L. Kesteven.

The special meeting was called to afford the subcommittee the opportunity of bringing to the Minister for Fisheries and of the forthcoming Commonwealth-State Fisheries Conference any matter which might be deemed to be of an urgent character.

Although reports were submitted in relation to several species, those dealing with crayfish were the most important from the management aspect. The crayfish findings are therefore reported here at length.

The workshop amongst other things discussed the results of a preliminary assessment of the status of the Western Australian crayfish stocks submitted by Senior Research Officer B.K. Bowen and Dr. R.G. Chittleborough.

A summary of the assessment is as follows:-

- (i) The crayfishery is being fished intensively and very few new areas are likely to be found;
- (ii) The high exploitation rate has reduced the accumulated stock to such a low level that the annual catch is now largely dependent upon recruitment during the immediately preceding closed period;
- (iii) The level of recruitment at the Abrolhos has fallen since the commencement of the fishery. During this period of 17 years, annual fluctuations in the level of recruitment have largely been removed, the peak levels having disappeared.
- (iv) Recruitment into the coastal fishery, as measured by the abundance of "white" crayfish, is gradually declining.
- (v) In order to conserve the industry, recruitment must be stabilized and, if possible, improved.
- (vi) The coefficient of catchability of the craypot has fallen over the past three years, although it appears that this is being restored by recent pot restrictions.

After considering the report from the workshop the sub-committee resolved that the indication is that reproductive stocks have been so affected by fishing that the rate at which the population can reproduce itself has been significantly lowered and this process is being accelerated. If the results of further work confirm this, the Government will be faced with the choice of either allowing the fishery to decline or, alternatively, of taking steps to restore it by -

- (a) limiting catch;
 - (b) closing areas;
 - (c) introducing artificial propagation practice,
- or a combination of one or more of the foregoing.

The sub-committee also believes that action along these lines may already be overdue.

HOPELESS REACH TRAWLING SURVEY

To further the Department's prawn research programme the Director late in July agreed that one prawn trawler might operate in the Hopeless Reach closed area for one night under the supervising of research personnel. The operation was designed to determine whether prawn density in that area was sufficiently high to provide a late season run of prawns on the commercial grounds.

On the night of August 1, the l.f.b. "Winkle", skippered by Mr. K. Simnet, carried out the survey under the supervision of Dr. R.G. Chittleborough and Research Officer R.J. Slack-Smith. Three transects were made. The results of the night's work are tabulated hereunder and on the next page. The survey revealed that the density of prawns in the closed area appeared to be low. The maximum catch rates were no greater than on the commercial grounds and the higher densities appeared to be confined to fairly small pockets. Tiger prawns were in very low numbers, comprising only 11% of the total catch for the night. The size-composition of king prawns showed a high proportion of very small individuals. Blue manna crabs and small leatherjackets predominated in the catch of other species.

The conclusion reached from the survey was that it was unlikely there would be a sizeable additional run of prawns from the closed area in the 1964 season.

PERCENTAGE GRADE COMPOSITION OF PRAWNS TAKEN

TAILS PER LB. - HEADED

Grade	Transect I		Transect II	
	Kings	Tigers	Kings	Tigers
31 +	24.3	2.6	39.2	12.7
26-30	58.3	17.7	53.2	29.9
21-25	15.3	31.6	6.3	29.0
16-20	2.1	21.4	1.4	13.0
16 -	0	26.7	0	15.4

SURVEY TRAWLING IN HOPELESS REACH, SHARK BAY, ON AUGUST 1-2, 1964. BY L.F.B. "WINKLE"

Transect	Start Time	Duration (Minutes)	Depth (FMS)	Direction Trawled	Kings		Tigers	
					Catch (lbs)	Catch /Hour	Catch (lbs)	Catch /Hour
* No. 1 Start 2 miles at 330° from tip of Herald Bight Bank Finish 6½ miles due east.	1835	15	6½-7½	E	2	8	1	1
	1900	30	7-9	E	15	60	1	1
	1940	40	9-9½	E	50	75	2	3
	2030	55	9½-9	E	5	38	5	5
	2140	50	9-7½	E	2	2	3	4
No. 2 Start 9 miles off Peron Peninsula at 25°40'. Finish 1¼ miles east of Herald Bluff.	0053	35	7½-8	W	2	3	3	5
	0140	42	8-8	W	15	21	5	7
	0235	45	8-8	NW	65	87	4	5
No. 3 Start 7 fathoms due east of Herald Bluff. Finish 7 fathoms 1¼ miles due south of start.	0410	30	6½-7	S	15	30	5	10

TEN TRAWLERS IN PRAWN SURVEY OPERATIONS

The generosity of Mr. G. Powell, Managing Director of Engineer and Marine Service Pty. Ltd. in making his firm's 10 prawn-trawlers available to the Department at the conclusion of the recent prawn season for research work in the Shark Bay-Carnarvon area, enabled the Department's research officers to secure further data on prawn abundance and also to obtain biological material for maturity and size-distribution studies.

Early in August Technical Officers N.E. McLaughlan and E.H. Barker, Inspector R.G. Emery and Assistant Inspector G.D. Noble each boarded a trawler of the E. & M.S. fleet at Shark Bay. Research Officer R.J. Slack-Smith had planned that sample trawling would extend over three nights by 10 trawlers in predetermined blocks extending from approximately 30 miles north-west of Carnarvon to well into Shark Bay opposite Denham. It was intended that Technical Officers McLaughlan and Barker would work on a different vessel each night (transferring from vessel to vessel either at sea or at anchorage during the daylight hours), and that Inspectors Emery and Noble each work on two boats.

Unfortunately after the first night activities the trawlers had to return to port when bad weather set and prevented further trawling. However, the data secured on the first night proved quite useful for research purposes.

SPEEDY YELLOWFIN TUNA

Yellowfin tuna have been timed to swim at 45 miles an hour, according to an article appearing in the June, 1964, issue of "Pacific Fishermen". Speed tests were carried out as a part of an experiment for the U.S. Navy to determine ways of adapting the design of a fish's body to water craft, to increase their speed and economy of operation.

Two University of California scientists at Los Angeles using a magnetic "speedometer" attached to a fishing rod measured the speed. The scientists said that a wahoo, a member of the mackerel family, swam even faster than the Yellowfin, reaching speeds up to 48 miles an hour. Until this new record was obtained, zoologists were of the opinion that fish seldom if ever swam faster than 27 m.p.h.

CLEARING HOUSE

WORLD FISH RESOURCES MUST BE MORE WISELY MANAGED

The lack of wise management of the world's fisheries resources seriously restricts man's ability to reap a maximum harvest from the sea, warned Dr. D.B. Finn, former Director of the Fisheries Division of the Food and Agriculture Organization (FAO). He blamed this situation on the intense competitiveness of private fisheries enterprises and the inability of governments to agree on a common code of discipline in exploiting the oceans.

Dr. Finn, who retired from his FAO post on January 31, 1964, after 18 years as head of that Division, was asked to speak in his personal capacity at the FAO Advisory Committee on Marine Resources Research meeting held in Rome in February 1964. "The failure of the International Whaling Convention, particularly as it affected the survival of the blue whale, is one example," he said. "The result is that the blue whale is now economically extinct. It seems to me that the world is now on its way to this state of affairs at a rapidly increasing pace," he continued.

At the International Whaling Convention meeting held in 1963, member nations were unable to agree upon restricting whaling catches in order to preserve whales from possible extinction. The pressures put upon governments by industrial fishing combines were alleged to be the usual cause of such failures. Dr. Finn said, "This is because industrial combines in any one country result in more effective political pressure in gaining government concessions. Numerous small individual enterprises in the same country cannot effectively exert this kind of pressure. Private enterprise in fishing tends to become more oligopolistic, if not outright monopolistic. Although this may increase efficiency and make possible a better use of capital, it does nothing to relieve the competition between countries for the spoils of the chase. In fact it may make it worse. Nor does increased efficiency in catching per se do anything to produce wiser cropping or to achieve the maximum yield. Under such regimes, the yield of the sea may be far below its potential production. Eventually only the most efficient private expeditions will be able to make fishing pay. This is not necessarily true for state-operated expeditions which may be able to disregard costs as a matter of government policy."

Another problem, Dr. Finn continued, was the sheer number of organizations engaged in fisheries research. "Look at the many international groups now working at this task. . . . With such multiplicity, one can imagine what a tremendous task it would be to achieve a 'smooth co-ordination of effort.'"

Dr. Finn said FAO's Fisheries Division, despite its qualified and efficient personnel, was not equipped to carry out all the work the world expects of it. He said that man now has the scientific know-how to truly farm the sea and that world fishing faced a renaissance such as occurred during the agricultural revolution 100 years ago. Reduced to its simplest terms, world fishing has two elements -- the nature of fishing itself, and the living resource and its response to man's exploitation. Describing the first, he said, "modern fishing is a fiercely competitive hunt. The hunters, and their skills, increase daily." On the second point, he said there was an urgent need for more knowledge of just what the seas' resources are and their likely response to different intensities of fishing. "Until we can say more about this, it is very unlikely that the arguments for wise exploitation will be very convincing. It is here that the challenge lies for the fisheries scientists; it is here where the greatest urgency prevails." (Food and Agriculture Organization, Rome, February 7, 1964.)

(Commercial Fisheries Review Washington, D.C. April, 1964)

PORPOISE AND DOLPHIN RAVAGE FISHERMEN'S CATCH AND GEAR

The porpoise and his larger cousin, the dolphin, are often thought of as man's best friends in the sea. Fond of humans, remarkably intelligent, incurable show-offs, both those mammals are popularly painted as playful princes of the deep. This view is not shared by the fishermen of the Mediterranean. From Barcelona to Beirut, from Trieste to Tripoli, porpoise and dolphin alike are detested as pests, robbers, and natural enemies of all who make their living from the sea.

A study of the General Fisheries Council of the Mediterranean (GFCM), written by C. Ravel of France and published recently through the Food and Agriculture Organization, gives the reasons for the fishermen's hostility.

Here are a few: Porpoise and dolphin annually destroy or seriously damage thousands upon thousands of fishing nets ---not only nets used near the shore but trawls working over the continental shelf at depths up to 400 feet.

Year after year those animals chase away schools of tuna the fishermen have sometimes tracked for days.

Porpoise and dolphin feed on diminishing stocks of sardine, anchovy, sole, and other fish that make up the bulk of the Mediterranean catch.

Italian fishermen report that porpoise alone cost them about \$500,000 a year in destroyed or damaged nets. The French estimate damage to gear at \$400 per boat for the Mediterranean fishing fleet. The Spaniards say the porpoise damages or destroys up to 20,000 items of gear a year. Dolphin are a major threat to the prize bluefin tuna fisheries off Morocco's north coast. Yugoslavia, with an average of 3,000 nets ruined and 6,000 damaged, reckons its yearly losses to those animals at about \$270,000.

What is doubly galling to the fishermen is that the porpoise and the dolphin have public sympathy on their side. Any Mediterranean-wide campaign against them would probably set off a chain of protests. Admiration for the porpoise and the dolphin goes back to ancient times. Greeks and Romans saw the dolphin as a noble, even divine, creature. Homer called the dolphin "the King of Fishes and Lord of the Sea." He also said that to hunt the dolphin was sinful and displeasing to the gods. Pliny cited the dolphin as a savior of drowning men and a fierce fighter of crocodiles in the Nile.

Despite the porpoise-dolphin's established public relations image, the fishermen do what they can in their own defense. They use a variety of attacks:

Porpoises and dolphins are shot with rifles-- without much real effect on their numbers. Underwater detonators and grenades scare them away but seldom kill them. Poisons are poured in the sea where they are thought to collect-- usually without impressive results. Ultrasonic wave emitters frighten them away from fishing boats-- temporarily. Once the echo-sounders are shut off, the "divine creatures" come swarming back. Other methods are tried--with indifferent success.

The GFCM study offers one solution: eat them. Ravel's study says that "porpoise hunting might perhaps be intensified if porpoise meat could be marketed in the ordinary way."

He points out that although porpoise meat is little eaten in his own country (its bright red color is considered shocking), there is no reason why the meat could not achieve popularity.

"It tastes very good, rather like venison. Certain cuts--fillet, tongue, brains, liver and kidney-- are special delicacies. In other countries, such as England and Italy, porpoise meat is highly esteemed and eaten quite normally.

"In Canada," the study continues, "canned dolphin meat is an enormous success, so that its poor reputation elsewhere is quite undeserved and ought to be changed. Porpoise meat should find the place it used to enjoy on the market and this would probably be the best way of keeping down the numbers of those animals."

A good way of combatting the Tursiops species of dolphin, Ravel recommends, is to "harpoon them on sight." Thus Mediterranean fishing boats, especially those engaged in tuna and sardine fishing, would do well to keep harpoons aboard "so as to deal with the Tursiops when they start prowling around the boat."

Of all the Mediterranean nations only Turkey has really gone after the dolphin properly. The Turks hunt the animal with military rifles from motor boats of 20 to 150 horsepower. Each rifleman is issued 1,500 bullets and in years when there are plenty of dolphin the Turks may kill from 5,000 to 8,000 tons.

"Turkey, therefore," the study states, "has organized dolphin hunting in a truly systematic, businesslike fashion, so that the predators do not overabound in Turkish waters and thus do not cause serious damage to the fishermen's nets,

Significantly the Turks like porpoise and dolphin meat and its marketing helps out a great deal in supplying the population with high-grade protein.

Ravel's final recommendation is the use of underwater acoustic signals. As porpoise and dolphin are known to communicate with one another by such signals, he thinks that it may soon be possible to keep them at bay by transmitting their own alarm or distress signals.

"In other circumstances," his study concludes, "different signals might be used to attract those creatures to specific points, so that they may be caught and killed by the appropriate means."

(Commercial Fisheries Review Washington, D.C. May 1964.)

CRAYTAILS TOUCH NEW PEAK PRICE IN U.S.A.

Cray tails have reached a new peak in prices in the U.S.A. this season with wholesalers paying 2 dollars (about 18/- Aust.) ex-store per lb. The high price is being reflected in the Sydney fish trade where crays are selling, now, at the near-record price of 6/6 to 7/- lb wholesale. And the price could go higher.

Tasmanian crays, which usually keep Sydney supplied in the winter, are going instead to America this year. Fishermen in Tasmania, are being paid 4/6 lb for green crays "on the bank".

N.Z. Shipment

Meanwhile, Sydney's demand for crays has not gone un-noticed by the South Africans, who, through their Australian subsidiary Irvin and Johnson (Australia) Pty. Ltd, of Woolloomooloo, this month air freighted crays from New Zealand.

A shipment of half-a-ton of live crays came from Coramandel (New Zealand), by T.E.A.L.

The crays ranged from 2lb to 5lb and were sold - we understand - to a Sydney processor who farmed them out to the trade as "Tasmanian crayfish."

We haven't a clue on the prices or the amount of the processor's rake off.

(Fish Trades Review. Sydney July, 1964.)

FISH AUTHORITY TIGHTENS RULES FOR DIRECT SALES

As from and including 1965, it will be almost impossible for individual fishermen to sell their catches direct to the public.

A new set of rules to be enforced by the N.S.W. Fish Authority, from January 1, 1965, is expected to be so watertight that less than a dozen fishermen in the whole of the State are likely to be allowed to sell their own fish.

One of the clauses likely to trip up a fisherman, requires him to furnish figures showing that he has been selling his fish to consumers "at a price that is reasonable and proper," taking into account that no commission, freight or other handling charges are involved.

Sydney Prices

It will be interesting to learn how fishermen at holiday resorts who sell fish to tourists at Sydney retail prices will get over this hurdle.

How are the catchers, who sell for cash and don't keep day-by-day records of their prices and takings, going to fare when the Authority asks them to present figures with their applications,

In order to give fishermen a chance to get the necessary statistics, the Authority recently sent out a circular letter setting out the requirements needed for a consent from 1965 onwards.

Close Investigation

The circular says:

"In case you should, at this stage, be contemplating making application for a Consent for 1965 it is made clear now that the recommending of the issue of such a Consent by this Authority will only be made after very close inquiry and subject to the submission by you of information to this Authority in a manner that is regarded as satisfying requirements."

The requirements would be:-

*The submission to the Authority of details of your catch and the manner in which it had been distributed during 1964.

*Confirmation that fish caught by you had been sold in the locality specified in the Consent or delivered to Markets conducted by this Authority or to a co-operative trading society.

*That information available to and reaching the Authority is to the effect that the holder of the Consent is selling his catch to the consumer at a price that is reasonable and proper, bearing in mind that normally no commission is payable nor, usually, is any freight or other charges involved.

The Authority is making you aware of its policy at this juncture in order that you may prepare yourself to be in a position to endeavour to meet the Authority's requirements for 1965 and onwards.

"Unless you are prepared to substantiate your case for a Consent in the manner indicated the Authority will have no alternative other than to withhold its recommendation in respect of the future issue to you of a Consent" the circular warned.

(Fish Trades Review.

Sydney

July, 1964.)

PRAWNING OVER SHELF IS AN EXPLOSIVE GAME

Queensland fishermen are having one of their most successful seasons in years with some prolific catches of King prawns coming from new grounds over the Continental Shelf and close to The Great Barrier Reef. The grounds were first exploited by Joe Berger, skipper of the super trawler Ampol Cameo. His best haul - to date - was 5,000 lb of King prawns in a night's fishing. Ampol Cameo, however, is not the only boat now equipped to fish in deeper water. Other trawlers soon learned of her success and now all boats are being re-equipped to fish in 100 fathoms (600 feet).

New Hazard

However, the deeper trawling has brought a new and undreamed of hazard to fishermen. They are bringing up old ammo in their nets. The grounds being fished, are 12 miles off shore and were charted by the Navy and marked on maps as a dumping area for surplus ammunition when the U.S. Army was about to leave Australia after World War II. A lot of the ammo is still lethal but with prawns at 4/4 lb "on the bank" the risk is evidently worth it.

It is not the first time surplus war materials have been dumped on fishing grounds off the Australian coast. Our first dreadnought, the old Sydney, was sunk on trawling grounds off Sydney Heads, after World War I. After World War II all the junk under the sun was deposited off The Heads and steam trawlers have to go further afield for their catches. The Italian Seine trawlers frequently lose nets on old aeroplanes and bombs lying on the sea floor between Sydney and Newcastle.

(Fish Trades Review.

Sydney

July, 1964.)

DIRECTING SHOALS BY ULTRASOUND

Soviet scientists believe that ultrasound can be used to direct the movement of fish shoals. The perception of ultrasound frequencies by fish is already established.

Generating directed acoustic fields in experimental conditions, biologists have succeeded in speeding up six-fold the movement of schools of Black Sea anchovy and to control their behaviour. The motor reactions of the fish to acoustic oscillations proved to be very stable.

The scientists made a special generator with a reflector, developing a directed acoustic field. The working part of the field was about a metre wide and 2.5 metres long and over 80 experiments were staged.

A school coming into contact with the zone of the acoustic field where the acoustomotive pressure exceeded 3,000 bars either turned back or swam along the acoustic beam.

Acoustic fields may be useful in commercial fishing. A generator must develop a directed acoustic field with a frequency of 10 to 15 ks in the form of a band extending from the surface of the water to the bottom. The acoustomotive pressure in the working part of the field should be not less than 20,000 bars.

The shoals could be directed towards the nets by two generators installed on the ship's bow.

An interesting proposition is to control the movement of fish by means of tape recordings of the sounds produced by dolphins.

(Fishing News.

London

3 July, 1964.)

GREATER INTERNATIONAL DISCIPLINE
URGED IN HARVESTING WORLD'S OCEANS

Governments have been called on to try harder to work out an international code of discipline for harvesting the world's oceans. The call came from the former head of the Food and Agriculture Organization's (FAO) Fisheries Division. Writing in the May/June issue of the Freedom-From-Hunger Campaign (FFHC) News, he says: "Any appeal for the establishment of such a code should not be directed to men's sentiments or to their fears, but to their enlightened self-interest, or even selfishness if you like."

The title of the article by the former FAO official is "The Warning of the Blue Whale." It is one of 9 articles, all concerned with world fishing, that appear in this recent issue of the FFHC News.

According to the article, the blue whale, the largest mammal known to have appeared on earth, is now commercially extinct. "It has all but vanished from the seas because the nations that hunted it were unable to agree on a common and enlightened conservation policy for the world's whale resources," he writes.

Other articles in this issue of FFHC News cover modern methods of finding and catching fish, whaling, inland water fishing in Syria, mechanization of small fishing craft with outboard motors, fishing boat design, tuna fishing, preservation of fish and fish products, and pearl farming.

The article on the blue whale refers to the inability of the whaling nations to agree a few years ago to limit their catches of that whale species. The article says, "In the future, if we are to protect the seas natural resources intelligently, we must have better treaties than the one that governed the hunting of the blue whale." (Food and Agriculture Organization, Rome, June 8, 1964).

(Market News Service New York July 7, 1964)

SOVIETS CLAIM MARINE GROUPS
CAN BE IDENTIFIED BY SOUND WAVES

A classification of marine specimens according to ability to reflect acoustic waves has been reported by Soviet scientists. They state that probing of the Atlantic with sound waves has revealed four types of marine life which can be identified in schools by different degrees of scattering of sound.

The first group is composed of marine life 10 to 150 millimeters (0.39--5.91 inches) in diameter and lacking a solid skeleton or rigid shell (jellyfish and similar specimens) which are called semireflectors of sound.

A second group includes octopus which are denser and have a thin skeletal foundation. A still greater obstacle to sound is presented by the group of higher shellfish (crustaceans) covered with a hard dense shell. Finally, the Soviets report that a substantial effect of sound scattering is produced by fish. A particularly noticeable sound dispersal, in the range of several kilocycles at least, is said to be produced by fish possessing swimming bladders.

Soviet scientists state that the use of sound waves to locate schools of fish will make it possible to determine the size and in some cases even the species of fish. ("The Fishing News", April 3, 1964).

(Market News Service

New York

June 25, 1964)

DISAGREEMENT OVER NEXT
ANTARCTIC WHALING SEASON

The 16th meeting of the International Whaling Commission has ended at Sandfjord, Norway, without any agreement being reached as to the total catch of whales to be allowed in the Antarctic during the 1964-1965 season.

The Antarctic pelagic whaling countries, Norway, Japan, Russia and the Netherlands, have, however, independently agreed to recommend that their Governments declare a joint total blue baleen whale catch during the coming season not to exceed 8,000 blue whale units.

The humpback stocks in the North Atlantic are thought to be in as poor a condition as the blue whale, and the Commission has decided to restrict the total production there for a further five years from November 8, 1964.

(Fishing News

London

July 24, 1964)