...F FISHERIES AND FAUNA
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...SERVICE BULLETIN

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STAFF NOTES

We extend a welcome to four new cadets who recently joined the inspection staff as ministerial appointees. They are Messrs. J. Cresswell, E. Earle, P.A.J. Pennings and J.G. Williams. They have been appointed to fill vacancies brought about by the creation of new positions and promotion to these positions from within the department.

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We also extend a welcome to Mr. J. Galbraith and to Miss R. Bower. Mr. Galbraith has commenced at head office as a temporary clerk, to relieve the consequential vacancy caused by the transfer of Mr. G.E. Dixon, while Miss R. Bower has replaced Miss P. Shaw at head office as a typist.

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History has been made by the granting to Miss M. Craig of a cadetship in fauna research. Hitherto, of course, all our cadets have been males. Miss Craig will attend the University during the next three years to complete a science degree and, on graduation, may be appointed as a research officer in the Fauna Branch. We accord her our full support in her pioneering role and wish her success in her chosen career.

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Supervising Inspector J. Bramley has, unfortunately, been in ill-health since February 14 and has been confined to hospital for three weeks. He is now convalescing and we wish him a speedy recovery.

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Assistant Inspector E.J. Little receives our best wishes for the future on the occasion of his recent marriage.

Mr. Little returns to Shark Bay on March 9 upon completion of his annual leave.

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Inspector R.M. Crawford is taking his annual leave from March 8 to April 13.

Assistant Inspector W.M. Mahoney will be on annual leave from March 21 to April 26.

Fauna Warden S.W. Bowler commenced two week's annual leave from March 8.

Mr. D.G. Sivyer is taking three week's annual leave from March 8 to March 28.

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Congratulations are due to Mr. R.G. Lindsay on his promotion to the position of Inspector, Grade 2. Mr. Lindsay has taken over at Jurien Bay and has transferred his wife and child to the departmental quarters situated there.

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Congratulations are also due to Mr. G. Hanley on his promotion to Inspector, Grade 2. Inspector Hanley is at presen attached to one of the mobile patrols.

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Inspector I.L. Cardon has been transferred to the position of Relieving Inspector, Grade 2.

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Inspector R.G. Emery has been transferred from the position of Relieving Inspector, Grade 2, to the position of Inspector Grade 2, stationed at Bunbury. He and his wife have taken occupancy of the house at Lot 73, Queen Island Road.

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Cadet Inspector K. Lewin resigned from his position with the Department on February 28. He aims to complete a course of study which could not be fitted in with his inspectorial duties.

INAUGURAL MEETING OF THE CRAYFISH INDUSTRY ADVISORY COMMITTEE.

Under amendments made to the Fisheries Act passed in 1965 two new committees were constituted to replace the Fishermen's Advisory Committee which the same amendments dissolved and abolished. The two new committees are to be known as the Crayfish Industry Advisory Committee and the General Fisheries Advisory Committee.

The powers conferred upon the Crayfish Committee are:-

(a) to inquire into and report to the Minister upon any matter referred to it by the Minister or by the Director in relation to the crayfish fisheries in Western Australian waters or any waters adjacent thereto; and

(b) to advise the Minister on questions relating to the management, control, protection, regulation and development of those crayfish fisheries, and make such recommendations as it thinks fit in relation thereto.

The Minister for Fisheries and Fauna has appointed the following persons as members of the Crayfish Committee:-

Mr. A.J. Fraser, Chairman.

Mr. J.C. Bowes, representing the Rock Lobster-Crayfish Development Association of Australia Incorporated.

Mr. R.D. Harrison, representing the Rock Lobster-Crayfish Development Association of Australia Incorporated.

Mr. L.H. Amm, being a fisherman actually engaged in the taking of crayfish.

Mr. G. Travia, being a fisherman actually engaged in the taking of crayfish.

Mr. B.K. Bowen, representing the Department of Fisheries and Fauna.

Mr. R.F. Boylen, Economist, being a person appointed to represent persons not commercially engaged in fishing or the fishing industry.

There is no provision for deputy members and, in the absence of the Chairman, the committee shall appoint one of their number to preside.

The inaugural meeting of this committee was held on February 4 and the Minister was present to welcome members. He addressed the meeting and stated that he would be looking to the committee to give assistance in developing policy for the crayfishing industry, to give this industry a collective voice for the benefit of the industry as a whole and to provide advice to the State and Federal Governments in administering the fishery.

He outlined government policy as seeking to establish a sound crayfishing industry in all its aspects (production, administration, research and policing) and to provide an adequate living for those engaged in the industry. He considered that the point had been reached where maintaining stability in the industry had to be thought of rather than solving problems as they occurred in a rapidly expanding industry. In changing from an open industry to a rigidly controlled one, many anomalies had arisen and he thought that the rationalising of rules applying on different parts of the coast would be a project to which the Committee could give consideration.

The Committee agreed upon its role of acting as a sounding board and advising the Minister in the administration of the crayfishing industry. It also agreed that one of its first endeavours should be the elimination of existing anomalies.

WESTERN FISHERIES RESEARCH COMMITTEE MEETING

The seventh meeting of the Western Fisheries Research Committee was held in Perth from February 3 to 8. In the five days preceding the meeting, research and technical staff held a technical session to discuss the work carried out during the year and review the programmes for the ensuing twelve months.

In opening the technical session, the Director (Mr. A.J. Fraser) said that this year it had been decided to adopt a different procedure. In previous years, research papers had been presented to the plenary session of the committee with the result that, on some occasions, there had been insufficient time for a proper discussion of research results. This year, he said, the research papers and proposed programmes would be discussed in detail, prior to the full meeting, by the research team and visiting research workers associated with similar projects in other States.

Mr. Fraser said that he was particularly pleased that

Professor Browning, of the Waite Agricultural Research Institute, South Australia, had been able to accept his invitation to attend the technical session. Professor Browning's comments and advice on the various research projects would be of great value to the Committee when it met the following week.

At the invitation of the Director, and with the concurrence of the meeting, Dr. A.R. Main, Reader in Zoology, University of Western Australia, acted as Chairman of the technical session. Others present were:-

Division of Fisheries and Oceanography, C.S.I.R.O.

Dr. G.L. Kesteven.
Dr. R.G. Chittleborough.
Mr. D.J. Rochford.
Mr. J.L. Bannister.
Mr. D.J. Tuma.

Division of Mathematical Statistics, C.S.I.R.O.

Mr. A.E. Stark.

Agricultural Liaison Unit, C.S.I.R.O.

Mr. H.S. Hawkins.

Department of Harbours and Marine, Brisbane.

Mr. N.M. Haysom.

Waite Agricultural Research Institute, South Australia.

Professor T.O. Browning.

Western Australian Museum.

Dr. R.W. George.

Department of Fisheries and Fauna, Perth.

Mr. B.K. Bowen.
Mr. R.J. Slack-Smith.
Mr. R.C.J. Lenanton.
Mr. N.E. McLaughlan.
Mr. E.H. Barker.

In all, ten papers were presented to the technical session covering eight main items. They were:-

(1) Sperm Whale Research, by J.L. Bannister.
(2) Australian Salmon Research (Western Australia) by A.G. Nicholls.
(3) Western Australian Crayfish Research.

3.1 Recruitment Phase, by R.G. Chittleborough.
3.2 Exploited Phase, by B.K. Bowen.
3.3 Direct Measurements in Crayfish Research, by B.K. Bowen.

(4) Prawn Research in Shark Bay, by R.J. Slack-Smith.
(5) Geological Research in Shark Bay, by B.W. Logan, G.R. Davies, and D.E. Cebulski.
(6) Whiting Research in Shark Bay, by R.C.J. Lenanton.
(7) Automatic Data Processing and its application to Fisheries Research by A.E. Stark.
(8) Fishery Development in Western Australia by B.K. Bowen.

During the final day of the technical session statements setting out the recommendations of the working groups were prepared for consideration by the Committee. Included in these statements were the main points raised during the technical session discussions and the lines of research which should be followed in each of the research projects.

At the conclusion of the technical session the Director resumed the chair and, on the morning of February 8, the Minister for Fisheries and Fauna, the Hon. G.C. MacKinnon, officially opened the formal meeting of the Western Fisheries Research Committee.

Mr. MacKinnon expressed his appreciation of the work performed by the Committee, particularly as it was work done on a voluntary basis. He felt sure that past achievements would be reflected in continued expansion of the development of the fishing industry and hoped that the Committee would continue its efforts in contributing to our knowledge an understanding of the potential of the fisheries.

Dr. Chittleborough moved a vote of thanks to the Minister for his interest and support and assured him that the Committee was pleased to have the opportunity to make a contribution to future developments and would continue its efforts as enthusiastically in the future as it had in the past.

Present at the opening in addition to those who attended the technical session, were Mr C.G. Setter, Assistant Secretary (Fisheries), Department of Primary Industry, Canberra; Mr. A.C. Bogg, Director, Department of Fisheries and Fauna

Conservation, South Australia; Mr. B.R. Saville, Department of Fisheries and Fauna, Perth (Secretary to the Committee).

At the conclusion of the opening session, the Committee (Mr. Fraser, Mr. Bogg, Dr. Chittleborough, Dr. Kesteven, Dr. Main and Dr. Setter) met to discuss the documents arising from the technical session, a report by the Chairman, and the Project Leader's annual report. The full text of the technical session and committee meeting will be distributed to staff members when a report of the meeting is published.

COMBINED AIR-SEA INSPECTION

A further inspection by aircraft of protected coastal waters between Fremantle and Green Head, was undertaken on February 22. This flight took the form of a combined operation with the p.v. "Pelsart". On board the aircraft were Acting Supervising Inspector, J.E. Munro and Mobile Patrol Inspectors T.B. Baines and E.R. Hammond. "Pelsart" was in the charge of Inspector E.I. Forster.

Nearly 500 pots were sighted inside the one-mile limit and two fishing boats were seen to take evasive action when they were circled during the flight. A good view of roads, tracks and huts which appeared to have been recently used was obtained. Further investigation into these will be carried out by the mobile patrols.

The "Pelsart" which had moved off ahead of the aircraft was directed to the sightings and some 250 pots were seized and destroyed.

PRAWN TRAWLING PERMITS

The Minister for Fisheries and Fauna has decided to grant 17 permits for vessels to engage in prawn trawling in Exmouth Gulf and 30 permits for the Shark Bay-Carnarvon area, during the 1966 season.

The following conditions have been specified:-

(1) The vessel concerned shall, weather permitting, commence trawling not later than May 1, and shall operate continuously to September 30.

(2) The authority granted to any vessel which shall cease fishing before September 30, or does not fish on any day on which in the Minister's opinion weather conditions are satisfactory, may at the Minister's absolute

discretion be withdrawn without further notice, and the Minister may authorise any other vessel to fish for prawns in lieu.

(3) Any vessel authorised to operate in the waters of Exmouth Gulf lying south of a line drawn from the northern point of Bundegi Reef to the eastern foreshore of the Gulf in the vicinity of Tubridgi Point, shall not during the year 1966 engage in the taking of prawns in any waters north of that line.

(4) Any vessel authorised to operate in the waters of the Indian Ocean and Shark Bay, lying between the parallels of 24°30' and 27°0' of south latitude and east of 112°50' of east longitude, shall not during the year 1966 engage in the taking of prawns in any of the waters of Exmouth Gulf lying south of a line drawn from the northern point of Bundegi Reef to the eastern foreshore of the Gulf in the vicinity of Tubridgi Point.

CREATION OF NEW POSITIONS

With the establishment of the Research and Development Fund from license fees to be received from fish processors, a Development Section has been established in the Research Branch and the following new positions have been created:-

Senior Research Officer (Development), P-II-9/11, Research Branch.

Extension Officer, P-II-2/8, Administrative Branch.

Technical Officer (Development), G-II-3, Research Branch.

Technical Assistant (Development), G-VII-1/3, Research Branch.

All positions have been advertised in the Government Gazette and the first two in newspapers in the Eastern States and overseas.

The purpose of the new activities to be undertaken will be to undertake research aimed at developing unexploited marine fisheries and to assist and maintain liaison with any section of the fishing industry interested in development. Also, to convey to the fishing industry in practical terms the findings of research undertaken whether scientific, economic or technological, by all available means of communication and to give advice on matters related to fish hygiene and marketing.

CLEARING HOUSE

SMALL FISH BOATS VITAL TO WORLD FOOD SUPPLY

Better fishing boats, more efficient, more capable, safer and more economical in operation - and particularly fishing boats under 100 tons - were rated as the prime tools by which the world's fisheries can expand their production. This was the conclusion reached by experts from 40 nations who attended the Third F.A.O. Technical Meeting on Fishing Boats held at Gothenburg, Sweden, on October 21, 1965.

Speakers left no question of the need for more fish to meet a growing demand throughout the world, not only for the nourishment of under-developed nations but also for the health and well-being of all mankind.

Hunger is perhaps the greatest problem in the world today, and it will become increasingly so in the years to come, for in spite of advancements and improvements in food supply, only in fishing does that supply not lag behind the growth in demand as a result of population increase and rising standards of living.

World fishing is the only major source of food whose yield is growing faster than the growth of the world's population.

Great integrated, distant water factory-type vessels are becoming of increasing importance, but 80% of the world's catch of fish is taken from above the continental shelves, which are obviously most effectively fished from adjacent shores, and in large part by vessels under 100 tons.

(Pacific Fishermen U.S.A. November, 1965)

WILD WOMEN

For many years now it has been the practice of weathermen to give hurricanes and tropical cyclones femine names.

There are two explanations of its origin: (1) that as these storms, like some women, are tempestuous and unpredictable, they should have women's names; and (2) it was a natural progression from the practice of American airmen during the last war of naming their planes after sweethearts, film stars and pin-up favourites. Whatever the reason the practice has stuck and, meteorologically speaking, has become universal.

In Australia, the task of collecting suitable names

falls to the senior meteorologist (general services) at the central office of the Bureau of Meteorology. Last year he drew up a list of 90, which will last for the next three cyclone seasons. Thirty names were allotted to each of the regional offices in Perth, Darwin and Brisbane.

Compiling the list was not just a matter of thinking up girls' names. First, a check had to be made with a list of names drawn up by the Mauritius meteorological service, to ensure that Australia would not duplicate any of them (generally speaking, weather in the southern hemisphere travels from west to east, and storms developing over the western Indian Ocean could move across to Australia.)

The next consideration, and probably the most difficult, was to find 90 euphonious names, all without too many syllables. Most important, the names must be easily usable over communications networks in times of emergency. No name, of course, can be used more than once during this three-year period.

(Walkabout Melbourne February, 1966)

RECORD DIVES

The deep diving ability of the sperm whale is evidenced by the few occasions when a whale has become entangled in a submarine cable. On the basis of such observations these toothed whales are known to dive to nearly one mile below the surface. Whether this is a normal or frequent exercise is not known. It is more surprising to discover that seals, so commonly seen near shore in shallow water, also have deep diving capabilities. Zoologists recently attached depth gauges to Alaskan seals and examined the gauges following a series of dives. The deepest dive recorded was nearly 1,500 feet and the longest period of immersion twenty-eight minutes. One seal returned with a 5 foot long fish in its mouth.

(Sea Frontiers Florida, U.S.A. February, 1966)

PESTICIDE DANGER TO MARINE LIFE

The U.S. Fish and Wildlife Service has found that astonishingly small amounts of pesticides can kill shrimps, crabs and other forms of marine life. One part of DDT in one billion parts of water was found to kill blue crabs. Less than one-half of one part of some pesticides in a billion parts of water killed the commercially valuable brown and pink shrimp. Perhaps the greatest danger lies in the fact that plankton

ıd its plans for expansion were modest.

Recently, however, the industry has shown great ıtality. Various incentive schemes have been introduced, ɔrders for larger and better equipped fishing vessels have ɐen placed and prospects for substantial export trade have ɔened up.

In these circumstances, the industry has been able ɔ present a stronger case for protection from foreign ɛssels. Even with the three-mile limit there had been ɹlegations of Japanese infringement.

New Zealand has only rudimentary fishery patrol ıcilities. The vessels normally employed are small and slow, ıd no match for the huge Japanese fishing craft.

Western Fisheries Canada January, 1966)

MODERN MARKETING BRINGS QUEENSLAND PRAWN BOOM

Big things are happening to the prawn industry of ıeensland, Australia's north-eastern tropical State. A ɛcade ago, prawn trawling was almost non-existent in ıeensland as a commercial enterprise, but the State's Fish ɔard now exports prawns at the record rate of $950,000 a ɐar to countries which include Japan, the Pacific Islands, ıe U.S.A., Britain and Europe. Another annual $470,000 ɔrth is sold locally. Most prawns exported are frozen, fresh ıd headless.

Central Processing

The Board - set up to stabilise Queensland's ɹshing industry through orderly marketing -handles about 10 ɹllion lb. of fish each year and runs 21 fish markets through- ıt the State.

It recently announced plans for a new $950,000 centre ɔr processing and marketing prawns and fish at Brisbane, ıeensland's capital and 60 new prawn trawlers have been ıunched this year to join the Queensland prawn fleet.

This large-scale expansion follows new discoveries ' giant king and tiger prawns in 65 to 120 fathoms between) and 30 miles east of Brisbane.

The new processing centre will have two unloading ıays capable of accommodating vessels up to 80 feet. ɛrimetered by three mechanically equipped concrete piers

productivity has been shown to be reduced by 50 - 90 per c when subjected to a concentration of one part per million only four hours. Since all life in the sea depends or pla great kills of plankton, unnoticed in themselves, could me the loss of tremendous quantities of fishes dependent on t micro-organisms for food.

SPECIAL RESEARCH VESSELS

The Navy has put into service in southern Califo a new research vessel to be used in recovering experiment torpedoes and making ocean bottom surveys. T.V. Cameras suspended from cables will search the ocean floor at depth 6,000 feet and more. A dynamic positioning system holds t craft stationary in winds up to 25 knots. Positioning is accomplished with 448-h.p. outboard engines, two mounted f ward on each side and two at the stern.

(Sea Secrets Miami, Florida December, 1

JAPANESE DISPUTE 12-MILE LIMIT OFF NEW ZEALAND

Japan is going to take its dispute over New Zeal new 12-mile fishing limit to the International Court of Ju

The 12-mile zone went into effe.t on January 1, but so far, Japan, the country most seriously affected, ha refused to recognise it. Their fishermen will continue to observe the old three-mile limit.

Negotiations between the two countries continued right to the day before New Year's, but they were unable t reach an agreement. Japan now is preparing a proposal tha case be presented jointly to the International Court of Jus If New Zealand is not prepared to join in the presentation, Japan will probably go to the court alone.

Meanwhile, much interest has centred on whether t Japanese will temporarily observe the 12-mile limit and whether, if they defy the New Zealand legislation, New Zeal will be able to take effective steps to enforce it.

Increasing numbers of Japanese fishing craft have operated in New Zealand waters for several years. The coas waters are rich in high quality fish, and the Japanese have found it worthwhile to make the long voyage from Japan.

The New Zealand fishing industry has protested vigorously to the government but its voice in the past has been small because the industry was still largely undevelop

jutting out into the Brisbane River, they will provide at least eight berths for trawlers from 45 ft. to 80ft.

Incorporated with the mechanical gear on the centre pier will be an imported suction unloader which will suck prawns and small fish directly from the trawler's hold, weigh them automatically and convey them directly to the adjacent processing plant.

Production lines will be geared to receive seafood from a fishing trawler, clean, grade, pack and snap freeze it for distribution or storage in less than four hours.

Another pier will contain a mobile crane servicing vessels unloading fish for sale by auction and trash fish for conversion to fish meal and oil and a modern fish meal plant will be fed directly from the mechanical unloader.

(South African Shipping News and Fishing Industry Review - January 1966)

"VIRGIN GROUNDS FISHED OUT"

Reports of the destructive effect of heavy, uncontrolled fishing on virgin stocks of spiny rock lobsters (crayfish) has come in from Southern Africa.

In November, 1964, an expedition, which included biologists from the South African Divisior of Sea Fisheries, investigated the Vema Seamount, a ridge 35 square miles in area rising from the deep ocean bottom 540 miles north-west of Capetown.

This ridge was found to contain rich untouched stocks of Tristan rock lobsters (Jasus tristanii) and in a cautious report published a few months later the grounds were described by the Division.

This stimulated a spurt of uncontrolled fishing by dozens of vessels from South Africa and from other countries. For about five months last year substantial catches of large rock lobsters were made. Then the lobsters entered their seasonal moulting period. Fishing fell off and was later suspended while the catchers prepared for an even heavier assault on the stocks in the closing months of 1965. But Vema has apparently already been fished out and is not worth any further exploitation.

An assessment is now being prepared by the South African Division of Sea Fisheries to establish by observation

and study of the existing population, coupled with a comparison between these results and the data gained before exploitation commenced, if this is so.

(Fishing News and South African Shipping News and Fishing Industry Review January, 1966)

PLASTIC PRAWN POT TESTED

Recently Captain George Gerbrandt of the 110 ft. Maplewood opened an entirely new aspect of commercial fishing in British Columbia waters. He made the first trial of a novel type of plastic prawn pot in a demonstration which may make all older equipment obsolete.

Capt. Gerbrandt had learned of the new pot, built of modern materials by the Markland Works Ltd. of Amnerst, Nova Scotia, Canada. Then he promptly asked the firm for a sample shipment of their "Igloo" pot to run a pilot test in Knight and Kingcome Inlets, 200 miles north of Vancouver, B.C.

Although the "Igloo" was originally designed for Atlantic lobster fishing, he was sure that it would be ideal for the waters he knew so well. So the green plastic cages descended into Knight Inlet to inaugurate a new trend. He reported as follows:-

"On such steep shore lines, we depended largely on our Ross S-240 depth indicator to locate the 40 to 45 fathom contours at which Capt. Gerbrandt had formerly found prawns. The sets made at Glendale Cove and Kwalate Creek produced good hauls of large prawns. We doubtless lost a few of the smaller ones through the lobster-size mesh of the "Igloo", which shouldn't occur when the new model, specially engineered for western waters, is marketed.

The new pot functioned best in Belleisle Sound off Kingcome Inlet. Here a slightly flatter sea-bottom made location at the correct depth easier, and prawn were plentiful in the sound. With bait cups filled with chunks of ling cod or rock fish, the "Igloo" dispelled any doubts we had as to its efficiency; either model, (side or top entrance) caught prawn equally well."

A week of trial convinced Capt. Gerbrandt that he had a good thing in the new pot.

A more recent test of the "Igloo" traps involved them in an observed competition against a selection of wood and wire mesh pots. In this test, skin divers employed by a

Vancouver fishing company watched prawns turn away from the steep sides of the old-type boxes to negotiate easily the sloping plastic surfaces of the "Igloo". The results were revealing and decisive. The "Igloos" caught an average of 13 prawns apiece while the wood and wire cages came in a poor second with 4 prawns each.

(Pacific Fisherman San Francisco, California January 1966)

THE BUSTARD

In the early days of settlement the wild turkey or bustard was common throughout Australia in any part where grassland or light scrub was prevalent.

Last century turkeys were hunted and shot in great numbers throughout the Western District of Victoria, along the Murray River, on the grass plains north of Canberra, throughout New South Wales and particularly in the Darling Downs of Queensland.

But now the turkey is almost completely absent from all these areas. Its most-used districts, formerly over almost the whole continent, have been reduced by three-quarters and much of this being done within living memory. It is breeding well only in a few restricted areas, in parts of the Northern Territory, the Kimberleys of Western Australia and the Gulf country of Queensland.

What is the cause of such a drastic reduction in the numbers of this unique bird? Everyone thinks that they know the cause - "Turkeys are being shot". Shooting is one of the biggest factors, and it seems they will go on being shot despite full protection over the whole of Australia and a possible fine of up to $400 in some parts if the shooter is caught.

But there's the problem. In the remote and unfrequented areas which are the only places the turkey survives, and which it must have for breeding, the turkey-shooter can not be caught.

It has been proven over three quarters of its range that the turkey cannot survive the settlement and development of Australia. Will this also happen in the north? They are subjected to many dangers. The few inaccessible districts where yesterday they were safe are today being prospected, and tomorrow will be drilled for oil or grazed or subdivided for agriculture.

Another hazard is that the birds take three or four years to reach maturity, and apparently, during breeding, the turkey is very vulnerable to disturbance. They lay few eggs.

A Unique Bird

Most people are interested in the turkey. It is a unique bird about which very little is known. Even where it is still common in parts of North Australia, how many people have seen the large male "gobblers" blow out their necks into a balloon-shaped bag which stretches down over two feet to touch the ground in front of them? The tail is erected and bent forward to touch their head and the wings extended and drooped at their sides. This strange performance has been described only twice. In the London Zoo in 1874, and in the Adelaide Zoo in the early thirties.

Action Needed

It might be said that there are still large numbers of turkeys in certain places. But these same places are being exploited at such a great rate, that it is only a matter of years, ten or twenty at the most, before the turkey will be in very great danger of extinction unless decisive action is taken now.

Restrictions on shooting have shown not to be enough. The bird has been fully protected all over Australia since 1935. We must try something new.

A Plan to Save the Turkey

A plan has been proposed and has been adopted with full Government support by the Wildlife authorities of Western Australia, Victoria and the Northern Territory.

Firstly we must find out more about the bird before it is too late. The flocks of turkeys cannot be utilized, managed or preserved unless details of breeding, migration, food and other requirements are reasonably well known.

Secondly we must get the people on our side in what amounts to a race to save this bird from elimination over another three-quarters of its present day range. It is only with the co-operation and local knowledge of the people of the north that such a mighty problem can be tackled.

Thirdly, we must try to restore the wild turkey to at least a few of the areas where once it was common. This means capturing numbers of these birds, breeding them in a protected area and farming out the offspring to suitable protected wildlife reserves. If this is done with sufficient number of birds self-supporting populations might be built up.

(Fur, Feathers and Fins Victoria February 1966)

WORLD FISH CATCH

The world fish catch soared to a record 51.6 million metric tons in 1964, according to the Food and Agriculture Organisation (FAO). The 1964 catch was more than 4 million metric tons above the record 47.4 million tons caught in 1963.

Peru again led with the biggest single national catch of 9,130,700 tons in 1964 as against 6.9 million tons in 1963. Peru has led the world in national fish catch since 1962, when it overtook Japan. The bulk of the Peruvian annual catch is anchoveta, which is manufactured into fish meal for use as animal feed.

Japan was in second place in 1964 with a catch of 6,334,700 tons, a drop of 360,000 tons from its 1963 catch of 6,694,700 tons. The Japanese catch is more varied than that of Peru since Japanese high-seas vessels fish all over the world.

The estimated catch of about 5.8 million tons for Communist China in 1964 placed her in third place.

The U.S.S.R. was in fourth place in 1964 with a catch of 4.48 million tons, an increase of about 0.5 million tons over her 1963 catch of 3.98 million tons.

The United States was in fifth place with 2,638,000 tons in 1964, a slight drop from the 2,776,700 tons landed in 1963.

The other countries which caught over a million tons of fish in 1964 were Norway with 1,608,100 tons, India 1,320,300 tons, South Africa and South-West Africa (combined) 1,254,500 tons, Canada 1,210,700 tons, Spain 1,196,600 tons, Chile 1,160,900 tons, and Denmark (including Faroe Islands) 1,010,200 tons.

Countries with 1964 catches in excess of 0.5 million tons were the United Kingdom with 974,600 tons, Iceland 972,700

tons, Indonesia (estimated) 936,200 tons, France 780,400 tons, Federal Republic of Germany 624,300 tons, Philippines 623,500 tons, Portugal 603,700 tons, Thailand 577,000 tons, and Republic of Korea 524,000 tons.

(Commercial Fisheries Review Washington January, 1966)

HOW TO THAW FROZEN FISH

Frozen fish should be kept solidly frozen until ready for use. This is the advice given by home economists after extensive tests carried out by the U.S. Department of the Interior's Bureau of Commercial Fisheries. It was recommended that the fish be thawed at refrigerator temperature (40-45 degrees Fahrenheit) but only for long enough to make cooking preparations easier. The economists warned that fish thawed at room temperature may be ruined, as the thinner parts of the fish tended to thaw more quickly than the thicker parts and then spoil if left too long. Rapid thawing, they advised, could be achieved by running cold water over the frozen fish.

(United States Department of the Interior Markets News Service October, 1965)

SOVIET SUBMARINES FOR PACIFIC RESEARCH

Fisheries research workers in the Soviet Union will soon have two new underwater "laboratories" from which to observe gear and fish behaviour in the Pacific.

One large submarine, Tinro I, will be free-moving and self-contained, carrying a crew of five down to 300m. (1,000 ft.) with a range of 100 miles. Displacement will be 40 tons.

A smaller vehicle, Tinro II, will be operated from a tender and will have a steel inner hull encased in an outer hull of fibre glass. The submarines will carry communication, navigational and photographic and television equipment.

(World Fishing London January 1966)