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July, 1963

STAFF NOTES

The Director, Mr. A.J. Fraser, and the Fauna Officer, Mr. H.B. Shugg, will visit Jerramungup on July 2. Accompanied by members of the Fauna Protection Advisory Committee Mr. A.J. Milesi, Fire Control Superintendent of the Forests Department; Mr. J.B. Higham, of Albany; and Mr. A.H. Robinson, of Coolup, they will inspect sections of an extensive mallee reserve in that district and discuss with local civic leaders a proposal to amend its boundaries and to resite the reserve. The party will return to Perth on July 5.

On July 22, Mr. Fraser will accompany Mr. A. G. Bollen, Assistant Director of the Fisheries Division of the Department of Primary Industry, to Geraldton, Shark Bay and Carnarvon. A note on Mr. Bollen's projected visit appears elsewhere in this issue.

Our congratulations are extended to Technical Officer and Mrs. R.J. McKay on the occasion of the birth of their son Lindsay, on June 4. Mr. McKay commenced three week's annual leave on June 12.

Fauna Warden S.W. Bowler returned to Perth, on June 19, after a fortnight in the Plantagenet shire. He worked there with Mr. L.P. Strugnall, Vermin Control Research Technician, of the Agriculture Protection Board, on control trials of kangaroos in the Perrilup and Porongurup districts.

The Supervising Inspector, Mr. J.E. Bramley,

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left Perth for Carnarvon and Shark Bay on June 28. Later this month he will visit the Bunbury district.

Assistant Inspector A.H. Ullrich will complete his tour of duty on the p.v. "Vlaming" on July 15. He will be relieved by Cadet Inspector P.K. Enright, who resumed duty after annual leave on June 30.

Officers who will be on annual leave this month include Mr. J.B. Byleveld, of Head Office, who will commence one week's leave on July 8, and Cadet Inspector P.C. Willey, who will be on leave from July 1 to July 29.

Assistant Inspector C.W. Ostle will commence three week's leave on August 5.

Inspector T.B. Baines, of Shark Bay, resumed duty after long service leave, on July 1.

Mr. E.H. Barker, by notice in the Government Gazette of June 21, 1963, has been promoted to Technical Officer Grade 2 (classification G-II-1/2) in the Research Branch. His former duties as Inspector-in-Charge of the Bunbury district will be taken over by Inspector D.P. Gordon on July 15.

PERSONAL PARS

An erstwhile colleague and old friend, Mr. Matthew Goodlad, called on the Director for a chat on June 20. An erstwhile Shetland Islander, Mr. Goodlad saw service as an inspector of fisheries in most districts before being appointed as Pearling Inspector, Broome. He retired from the Service in his 65th year on December 1, 1955. Mr. Goodlad, we are pleased to say, was looking pretty fit.

Dr. G.F. Mees, the present Curator of

Invertebrates at the West Australian Museum, will resign from that institution this month. He will take up an appointment at the Ryksmuseum van Natuurlyke Histoire, in Leiden, Holland. We wish him every success in his new position.

* * *

Mr. A.G. Bollen, Assistant Director, Fisheries Division, Department of Primary Industry, Canberra, will arrive on July 17 to undertake preparatory work in an economic survey of the crayfishing industry in this State. As mentioned elsewhere in this issue, Mr. Bollen will accompany the Director on a visit to fishing centres at Geraldton, Shark Bay and Carnarvon. He will also be taken to Dongara, Jurien Bay and Lancelin by Senior Inspector J.E. Munro. Mr. Bollen will familiarize himself with most aspects of the industry and will have preliminary discussions with fishermen, processors and exporters. He is expected to return to Canberra about August 1.

* * *

Professor W.R. Dawson, Professor of Zoology of the University of Michigan, U.S.A., who had been working at the University of Western Australia under a Guggenheim Grant returned home last month. He was farewelled at an informal function held at the home of Dr. A.R. Main, Reader in Zoology in the University of Western Australia. The Fauna Officer, Mr. H.B. Shugg, represented the Department. Professor Dawson's two graduate assistants - Mr. Paul Licht and Mr. Vaughan Shoemaker, summaries of whose papers on the physiology and behavioural patterns in lizards appeared in the May issue of this Bulletin, have also returned to the United States.

FULL COURT UPHOLDS APPEAL

On June 25, the State Full Court upheld an appeal against the dismissal of a charge laid in the Perth Police Court, against crayfisherman Vinci Lombardo. Mr. Lombardo had been charged with having had in his control at Bunbury, on or about December 21, 1961, female crayfish having eggs or spawn attached beneath the body. The charge was first heard by

Magistrate A.G. Smith, in the Perth Police Court on December 21, 1962, but had been dismissed as the Magistrate considered that Lombardo had made "a reasonable and honest mistake". The State Full Court reversed the decision, holding that there was no evidence of this. In his reserved decision, the Chief Justice, Sir Albert Wolff, held that a fisherman as experienced as Vinci Lombardo would be able to tell if crayfish were spawning.

The case, which involved 483 boxes of crayfish, was then referred by the State Full Court to the High Court of Australia for determination of the accused's claim that as the crayfish had been caught outside the three-mile limit, the provisions of the State Fisheries Act, under which the complaint was laid, did not apply.

TUNA TAGGING

In a press statement issued towards the end of last month, the Division of Fisheries and Oceanography, C.S.I.R.O., referred to the tuna tagging carried out during that month from the chartered vessel "Estelle Star". By the time the charter terminated on June 30, about 5,500 Southern Bluefin Tuna had been tagged. This was a follow-up of the scientific work done from the same vessel a year or so ago, and brought the total number of tuna tagged in the area to about 10,000. In the 27 days of fishing this year, 5,416 tuna were poled and tagged, an average of 300 a fishing day.

The tags were attached to the fish in the middle of the back, near the second dorsal fin. Each tag consisted of a piece of plastic tubing five inches long, and about as thick as spaghetti. They were either red or yellow and some had different colours at the tip. Anyone finding a tagged tuna was asked to note :

- * the tag number
- * the colours of the tag
- * the date and position where the fish was taken.

The above information should be sent to the C.S.I.R.O. Fisheries Laboratory at Cronulla, New South Wales, which will calculate the weight of the fish, and pay the fisherman the price he would have received had he kept it and sold it through the normal channels.

Should a tagged fish be bleeding when captured, and seem unlikely to survive if returned to the sea, C.S.I.R.O. wishes the local inspector to take possession of it. If a C.S.I.R.O. officer is available, the fish could then be handed over to him, otherwise it should be frozen and advice sent to this office.

It is topical to recall that in the December 1962 - February 1963 report of the Western Fisheries Project, it is recorded that 8 tuna tagged in Western Australian waters during the first half of 1962, had been retaken in the South Australian tuna fishery early in 1963. This, the report said, was the first definite proof that the Western Australian juvenile stocks contributed to the stocks fished farther east.

WHALING

Critical Plight of Humpbacks

In his report to the Western Fisheries Regional Committee last February, Dr. R.G. Chittleborough, of the Division of Fisheries and Oceanography, C.S.I.R.O., reported that the catches of humpbacks on the Western Australian coast had been discussed at a meeting of the Scientific Committee of the International Whaling Commission, and also by the Committee of Three - each of whom is a specialist in fisheries population dynamics. Using three different methods, the Committee estimated that the Group IV (Western Australian) humpback stock of mature individuals had numbered approximately 10,000 in 1949, when the post-war exploitation began, but had fallen to about 1,000 in 1962. The Committee also estimated that the present-day stock could be sustained only by limiting the catch to less than fifteen individuals a year. It was further estimated that even if there were a complete cessation of whaling, it would still be 34 years before the stock would build up again to the 1949 strength, and that a catch of only two hundred and fifty whales a year would then be the maximum that could be taken without seriously depleting it.

International Commission to Meet

The fifteenth meeting of the International Whaling Commission will be held in London on July 1. It will consider the findings, mentioned above, and the

recommendations of the Committee of Three. One of the recommendations is that there should be a total prohibition on the taking of humpbacks for a considerable number of years - probably 50 years or more. The Committee has also recommended drastic reductions in the take of blue whales, fin whales and pigmy blue whales.

Local Whaling Continues

Meanwhile, at Carnarvon, the Nor'-West Whaling Company intended to commence its humpback whaling season on July 1. It has been allotted a quota of 450 humpbacks this year. This Company's chasers took its first sperm whale for the season on June 3, and had secured a total of 37 sperms by June 27.

The Cheynes Beach Whaling Company, which has been allotted a quota of 100 humpbacks this season, took its first whale of this species on June 13, and by June 29 a total of 8 humpbacks had been taken. This Company is continuing to operate on sperm whales, and by June 29 had secured a total of 198.

FLORA PROTECTION - HONORARY INSPECTORS WANTED

The Minister for Forests, Mr. S. Bovell, has advised the Minister for Fisheries, Mr. Ross Hutchinson, that it is the Government's wish that all officers of the Fisheries Department, who are over twenty-one years of age and are interested in the protection of native flora, be invited to make application for appointment as Honorary Inspectors under The Native Flora Protection Act. The Minister for Forests added -

"While the Native Flora Protection Act gives wide powers to inspectors in connection with the apprehension of offenders, it is felt that the prevention of offences should be the primary aim and that honorary inspectors, and indeed every responsible citizen, can render service towards the better protection of our native flora by using every opportunity offering to impress upon members of the public, and children in particular, the futility of picking flowers which once picked rapidly

fade and must be thrown away. The same flowers left on the plant will continue to give pleasure during their season to many people and later develop seed to increase the display in years to come."

Any officers interested in securing appointment should make application to the Conservator of Forests, Rural and Industries Bank Building, 54 Barrack Street, Perth, who will supply any further information required. It should be noted that Honorary Inspectors under the above Act are empowered -

- (a) to examine any wildflower or native plant in the possession of any person and
- (b) for that purpose to stop and inspect any vehicle and to enter into or upon any place whatsoever or any vessel and to open and inspect any package or receptacle,
- (c) to take possession of any wildflower or native plant which appears to have been unlawfully obtained,
- (d) to demand the name and address of any person in possession of any such flower or plant.

Any person who, when required to do so by an Honorary Inspector under the provisions of the above Act,

- (a) refuses to give his name and address ;
- (b) gives a false name and address ;
- (c) refuses to deliver up any wildflower or native plant, or who delays or obstructs an Honorary Inspector acting under such authority, is guilty of an offence.

BARLEE RANGE NATURE RESERVE

An area of over 400 square miles in the North-West Land Division has been set aside as a reserve for the conservation of flora and fauna. It will be vested in the Fauna Protection Advisory Committee.

Of marked scientific interest, the area lies between the Henry River and the Wannery Creek system, both of which are tributaries of the Ashburton River. Exceedingly rough and rugged, it has not so far been

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properly explored. Evidence collected by a survey party set up by the Fauna Protection Advisory Committee, and from earlier evidence collected by museum personnel, has established that the area contains relictual groups of flora and fauna, normally restricted to the Kimberleys and the South-West. It is believed to contain both species of Rock Wallaby and a number of other interesting forms. One of these is an indigenous mound building mouse which, as Ellis Troughton has pointed out in his book "Furred Animals of Australia", has the longest tail and the longest name - Leggadina hermannsburgensis - in its group. Amphibian and invertebrate specimens of outstanding zoological interest were also recorded there.

The reserve includes spectacular scenery consisting of wild, spinifex-covered ranges slashed by precipitous-walled gorges, in which deep, ice-cold freshwater pools and tropical vegetation occur. It is anticipated that some of the reserve will be opened up as a national park in the years to come, when communications have been improved. At the present time, however, the only possible way of taking tourists there, would be by helicopter. There is, of course, a complete absence of buildings and other facilities which tourists would need.

NORTHERN CRAYFISHERY PROSPECTS DIM

Dr. R.W. George, Curator of Invertebrates at the Western Australian Museum, said in a press release last month that the chances of developing a large scale crayfishery in our northern waters were not good. Dr. George had then just returned from an overseas research trip, during which he visited the crayfishery in the Gulf of Aden, which operates on the so-called green crayfish, five species of which are found in our northern waters. Dr. George said that although the marine conditions were ideal for the green species along the Indian Ocean coast of East Aden, he thought that the fishery had little chance of becoming a major industry. As the waters of our north-western shores were less favourable than the Aden grounds, the chances of developing a large crayfishery in the North-West, seemed even less he added. In a personal communication, Dr. George said that our northern waters were somewhat comparable to those around Madagascar, where all the tropical species

of crayfish occurred, and where efforts had been made, without success, over a considerable period to establish a crayfishery.

Nevertheless, the fishing tests outlined in the previous issue of this bulletin will be undertaken this month by the r.v. "Lancelin" under the direction of the Senior Research Officer, Mr. B.K. Bowen. In addition to the special Aden craypot, normal cane and steel-framed pots will be used together with "tangle" nets. Underwater surveys will also be carried out by Mr. Bowen and Technical Officer, R.J. McKay.

COMFORT OR COLOUR

The question of having to decide whether the aesthetic and sentimental appeals of birdlife on parts of the Swan River, are worth the discomfort suffered by those sections of the public living close to mosquito-infested swamps and marshlands around the river, will have to be decided soon.

The results of an extensive survey conducted by the Public Health Department were summarised in a press release issued last month by the Minister for Health, Mr. Hutchinson. Some of the 63 sites discovered to be actual or potential mosquito breeding grounds, include some that are used or are very near those used by birdlife. Two of these, the first between Alfred Cove and Attadale, and the second near Pelican Point, are of particular importance and may need protection, not because the mosquito breeding areas themselves are of value to wildlife, but because the projected large-scale method of dealing with the mosquitoes - by land-fill or dredging - may render adjacent beach shores unsuitable to the birds which feed and rest there during the summer months. It is feared that the thousands of waders which annually migrate from nesting grounds in Siberia and "stage" at Pelican Point may be seriously affected. The matter will be referred to the Fauna Protection Advisory Committee, at its next meeting on August 2.

W.A. FISH PRODUCTION 1962

The table at Page 183, sets out the total catch of the main species in 1962 compared with 1961.

The overall production in 1962 was a record and so too was that of crayfish. It will be seen that the main difference between the 1961 and the 1962 production figures, however, was caused by the larger catch of salmon. The production of this species fluctuates rather widely, and although the 1962 catch was high, it was not a record one. The highest production of salmon was recorded in 1954, when 6,126,277 lb. was taken. Nevertheless 1962 salmon catch was the second highest recorded.

The table on page 184, sets out the total production of fish for the last eleven years. For comparative purposes it includes the catches of the principal species. All figures are given in round live weight.

FAUNA NOTES

Assistant Inspector A.H. Ullrich reported that on May 12, when about an hour and a half out of South Passage, Shark Bay 36 albatrosses were sighted at sea, feeding in an area of about a half-mile square.

* * *

Commenting on the report published in the previous issue of the sighting by Inspector E.I. Forster, of a Sacred Kingfisher in the Fremantle Fishing Boat Harbour, the Fleet Maintenance Officer, Mr. A.J. Bateman, said that these birds were commonly seen there in the springtime and also in the summer. He added that they frequently sat on the rocks around the foreshore of South Bay (Fremantle Fishing Boat Harbour) and they were also seen between the East Street jetty and the old Castlemaine Brewery jetty - now sometimes called Prince's jetty. Mr. Bateman said, too, that a White-faced Heron or Blue Crane was also an unusual visitor in that vicinity, particularly during periods of low tides.

* * *

Inspector A.V. Green, of Geraldton, reported last month finding a dead possum on the road just out of Northampton. This is the northernmost sighting of one of these animals recorded here for many years.

W.A. FISHERIES PRODUCTION

SPECIES	Production 1962 (Round Weight lb.)	Production 1961 (Round Weight lb.)
Crayfish	19,275,216	18,881,998
Salmon, Australian	5,592,187	2,697,115
Snapper	1,422,425	1,782,034
Mullet	824,372	993,212
Ruff (Sea Herring)	813,427	871,323
Cobbler	709,993	750,794
Shark	603,271	423,718
Whiting, Sand	519,957	512,507
Prawns	488,614	29,513
Mullet, Yellow-eye	485,094	364,323
Jewfish, Westralian	253,667	303,600
Tailor	166,008	159,570
Mackerel Spanish	110,181	129,828
Whiting, King George	83,484	65,898
Herring, Perth	74,859	93,147
Samson Fish (Sea Kingfish)	66,020	65,732
Mackerel, School, or "Mulie"	60,720	22,007
Pilchard	59,626	66,971
Trevally (Skipjack)	58,654	83,825
Crabs	56,519	49,882
Bream, Yellow fin	52,119	56,148
Turtles (processed weight)	48,463	54,160
Garfish	45,512	63,397
Tuna	42,888	35,854
Leatherjacket (Silver Flounder)	30,673	51,906
Pike	24,355	28,655
Bream, Black	20,564	17,709
Groper	20,067	21,137
Flathead	16,975	15,923
Cod	16,403	27,638
Flounder	12,811	1,576
Yellowtail	10,013	9,948
Others	61,353	186,000
	31,926,490	28,917,048

W.A. FISHERIES PRODUCTION 1952 to 1962 INCLUSIVE

(Converted to live weight lb.)

YEAR	SPECIES						Total
	Crayfish	Australian Salmon	Snapper	Mullet		Ruff (Sea Herring)	
				River or Sea	Yellow-eye		
1952	8,415,425	3,008,837	679,801	529,990	253,042	780,249	15,834,084
1953	7,985,391	3,685,977	791,732	465,419	323,341	1,063,165	16,165,422
1954	10,279,531	6,126,277	1,306,381	395,366	300,762	618,443	21,212,002
1955	11,120,232	4,912,450	1,394,702	453,675	362,907	897,179	21,227,628
1956	10,638,938	4,821,941	1,413,224	548,071	256,903	767,407	20,580,256
1957	12,295,768	4,027,133	852,782	898,823	457,083	956,341	21,944,696
1958	14,500,779	4,091,280	922,824	859,192	476,401	889,083	24,504,518
1959	18,956,297	3,943,679	2,047,003	802,670	435,110	1,338,374	30,328,670
1960	18,376,144	2,550,054	1,681,185	638,682	543,290	1,084,077	28,293,456
1961	18,881,998	2,697,115	1,782,034	993,212	364,323	871,323	28,917,048
1962	19,275,216	5,592,187	1,422,425	824,372	485,094	813,427	31,926,490

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Dr. D.L. Serventy, Principal Research Officer, Wildlife Survey Section, C.S.I.R.O., reported last month the finding of a banded seabird at Madora Bay, north of Mandurah. It was an Arctic Tern, and bore a ring on its leg carrying the inscription - "4007833 Riks Museum, Stockholm."

Dr. Serventy added that there had only been two recoveries of banded European terns recorded in W.A. One was an Arctic Tern which had been banded as a juvenile on July 5, 1955, in a sanctuary near the White Sea. It was recovered 8 miles south of Fremantle on May 16, 1956. The second was a European Common Tern (Sterna hirundo) which was ringed at Marum, in Sweden, on July 9, 1955, as a nestling. It was found 4 miles south of Fremantle on January 7, 1956.

FISHING COMPANIES MERGE

It was announced last month that the Kingfisher Corporation Pty. Ltd., which claims to have an interest in 80 fishing boats operating from Fremantle and Geraldton, had merged with Empress Australia Ltd., which was said to hold contracts exceeding £8,000,000 for prawns and crayfish.

Later it was announced that, subject to Government approval, the new firm planned to establish a freezer base at Exmouth Gulf.

SHARK BAY PRAWNING LICENSES

It will be remembered that last year the Minister for Fisheries, Mr. Hutchinson, decided to limit to 25 the number of boats which would be licensed to trawl for prawns in the Carnarvon - Shark Bay fishery. For the information of inspectors, the companies or fishermen owning the privileged boats, and the names of their vessels are listed hereunder :

Nor'-West Whaling Company
(10 vessels)

Nor I, - II, -III, -IV, -V, -VII.
Toowoan Bay
Rambler
Friendship - R.
Winkle

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Engineer & Marine Services Pty. Ltd. (5 vessels)	Jupiter Sonoma Maria S.S. Saturn Oceanic
Poole's Fisheries	Bluefin
Eureka Fishing Company	Eureka
Kingfisher Corporation	Geraldton Empress
Ocean Trawling Co.	Atlantic Ocean
M. Lombardo	Nelma
F. Correia	Miss Portuguesa
T. Doak	Fredricka
M. de Sousa	Lady of Fatima
Seafarer Fishing Co.	Eckero
R.J. Phillips	Kia Ora III

TWO STRANGE OLD DUCKS!

Recently, the scientific division of the Criminal Investigation Branch of the Police Department, Perth, successfully determined for us the obliterated numbers which had been stamped on a number of returned duck bands. A strange coincidence was revealed when one of the band numbers was deciphered as 3182. When the banding records were checked it was revealed that this band had been attached to a Grey Teal at Yealering Lake by Inspector J. Traynor on January 23, 1955. A band from another teal banded at the same place was also returned about the same time. It was numbered 3204, and had been placed on a grey teal on January 25, 1955, only two days after No. 3182. The recovery details received indicated that both birds had been shot almost eight years later, on January 1, 1963. 3182 was shot 20 miles north-east of Kalgoorlie by a Mr. O. Bennetts, while on the same day, 3204 was shot 25 miles north-west of Kalgoorlie by Mr. B. McCahon.

Band number 3204 was not very badly worn at all - in fact its number was quite decipherable. On the other hand, band 3182 was very badly worn and anyone viewing it could not help but regard the restoration of its number as a marvel of science. The recovery of these bands not only tabulates an extraordinary coincidence, but also provides a valuable record of longevity in the species. The apparent continued general association of the two birds also challenges one's imagination.

SHOALWATER BAY SANCTUARIES

On June 20, Fauna Warden N.E. McLaughlan and Assistant Inspector A.H. Ullrich, accompanied Miss C.A. Nicholls, of the Division of Wildlife Research, C.S.I.R.O., on a banding expedition to the island sanctuaries in Shoalwater Bay. They also obtained some study material and recorded the following information on nesting and breeding on the islands -

SILVER GULLS (LARUS NOVOE-HOLLANDIAE)

Breeding Records and Population Structure Shoalwater Bay Sanctuary June 1963

Name of Island	No. of Adults	No. of nests with			No. of Juveniles.		
		1 egg	2 eggs	3 eggs	Banded Too Young	Not Banded On Wing	
Seal Island (1)	300-400	17	79	4	76	25	20
Shag Rocks (2)	80	1	5	-	2	-	-
Bird Island (3)	300	6	10	-	16	34	(4)

- (1) 3 adult birds and 12 juveniles found dead
- (2) 2 juvenile birds found dead
- (3) 12 juvenile dead found including 6 partially eaten.
- (4) These 34 were not banded as it would have been dangerous to disturb them.

Included among the interesting observations made by the party, were the following :-

* Little (Fairy) Penguin (Eudyptula minor)

About 20 birds were observed on Seal Island and two nests each containing 2 eggs were seen. The adults continued to brood the eggs and were not disturbed by the inspection. One adult was also seen under a rock ledge on Bird Island.

* White-capped Hair-Seal (Neophoca cinerea)

Three bulls observed on Bird Island.

* Pied Cormorants (Phalacrocorax varius)

About 300 nests, the majority of which contained nestlings in various stages, were seen closely packed along the north-east cliff on Bird Island. Most nests contained 3 juveniles while some had 2 and 1 but very few had eggs. No attempt was made to band these birds as it was anticipated this would have frightened the juveniles into the sea.

500 adults were seen on Shag Rocks. 132 nests were counted closely packed along the north-east cliff face, the majority containing 3 eggs, while others contained 1, 2 and 4. In strange contrast to the breeding stage on Bird Island, no nestlings were seen on Shag Rocks.

AN INTERNATIONAL DUCK

A press report from New Zealand, dated June 21, recounted what was said to be the first record of a Mallard having crossed from New Zealand to Australia. The duck concerned had been banded at Lake Tuakitotou in the South Island of New Zealand, and was shot at a place called Marrung Narrows between Lakes Albert and Alexandrina, approximately 90 miles south-east of Adelaide. The distance between the point of banding and the point of recovery was estimated at about

1,850 miles - as the duck flies!

There are many varieties of the Mallard, which is of the same genus (Anas) as our Black Duck. In fact the female mallard (and even the male mallard when in eclipse plumage) is difficult to distinguish in the field from either the male or female black duck. In past years, quite a few mallards were to be seen in Queen's Gardens, near Head Office, but they have disappeared in recent times. Whether they have shifted into the country, or become the victims of poachers, we do not know.

It is understood that the first mallards introduced into New Zealand were of British stock which are non-migratory. Later, quite a few American mallards were acclimatised, and some of these, particularly the Californian, does have migratory tendencies. Nevertheless, we cannot help but ponder on this reported inter-continental flight, and wonder whether a practical joker might not have been at work. However, there are previous records of ducks crossing the Tasman Sea, so that this report cannot be discounted.

MILADY'S FADS

A new fashion which is causing concern among conservationists and health authorities in both America is the growing use of live, decorated insects intended to be worn as costume jewellery.

The insects concerned are beetles about one inch long, on whose backs have been glued small jewels. Frequently, a light, silver chain with a fastening, is also glued to the beetle. This allows the live animal to be fastened to milady's coat or frock but free to crawl around as a living ornament. The beetles being used belong to the family Tenebrionidae which are said by "International Pest Control" in its issue May - June 1963, to include several injurious pests of plants and plant products. Customs officials in New York City were alarmed, recently, when they came upon nearly 200 live jewelled specimens that had been brought into the United States without authorization and were sold in local bars. The two species concerned - Megazopherus chiliensis and Zopherus holdemani - were alleged by the importers to be harmless. It was pointed out that this was a specious argument, as there were many well-documented cases of apparently-harmless plants and animals becoming pests when introduced into alien surroundings.

It is to be hoped that this American fad does not become a fashion here as we already have a surfeit of pests. The introduction of the beetles into Australia would be prohibited by law, but the attention of the Customs Department will be drawn to the new fashion.

THE AFFINITY OF FISHERIES

Another example of the similarity of problems encountered in fisheries management appears in a recent issue of "Sea Secrets", published by the University of Miami. Answering a question relating to the Florida Keys spiny lobster (crawfish) fishery, "Sea Secrets" says -

"Although the annual production of crawfish has not changed markedly, there has been a considerable increase in the number of traps fished, and fishermen are complaining about poor catches. The problem has become serious enough to warrant a study of the fishery by the University of Miami Institute of Marine Science, under the auspices of the Florida State Board of Conservation."

CHRISTMAS TREES HINDER TRACKING STATION

At the May meeting of the Royal Society an unusual exhibit was displayed by the Botany Department of the University of Western Australia. A note to this effect was recorded in the June 1963 issue of the Society's Proceedings which said that it had been explained to the meeting that American workers in the Muccha area had been worried by the erratic behaviour of some of their buried cables.

Examination revealed that the cables were being attacked by the haustoria (the modified roots by which certain parasitic plants attach themselves to their hosts) of the Christmas Tree (Nuytsia floribunda). The shielding on the cables was reputed to be resistant to termites and many other agents which perhaps indicates the efficiency of this beautiful tree to parasitize selected hosts. Cases of attack were said to have occurred up to 2 chains from the nearest tree and were most prevalent in the region of severed tree roots.

The Christmas Tree, the sole representative of its genus, is confined to Western Australia.

CLEARING HOUSE

CONCENTRATING FACTORS IN FISHERIES

by P.M.J. Woodhead
(Fisheries Laboratory, Lowestoft).

Every fisherman knows that in certain areas, and at certain times of the year, fish are concentrated sufficiently to give "good fishing". At first sight the oceans appear to provide a very constant environment compared with the land, and it might be expected that the distribution of fish within them would be fairly widespread. Why is it then that fish are found in local concentrations, and what are the factors which concentrate them? These are questions which are examined here.

Can Sound attract fish?

Hydrophones lowered to the sea-bed have recorded a wide variety of squeaks, croaks and grunts, and many of these sounds have been shown to be made by fish. Such noises are frequently used aggressively when feeding, to warn off other fish, but they may also be used by ripe, spawnny fish to attract others for spawning; male cod in spawning shoals make rasping grunts which could help to guide other cod in the vicinity to the shoal, and male "sea robins" also raise a chorus of staccato calls on the spawning grounds.

Numerous experiments have shown that fish may be trained to respond to sounds, such as a bell, and it appears that the range of hearing in many fish is not much less than our own, although their ability to locate the source of a sound is poor. Various attempts to attract or repel wild fish with artificially produced noises have usually failed to bring about any consistent response; the fish frequently gave an initial "start", after which they appeared to ignore the sound, even when it was used at intensities which would burst a frogman's eardrums. These investigations have been rather limited as yet, and there is the interesting possibility that ripe fish might be decoyed into nets by playing back into the sea hydrophone recordings made on normal spawning shoals; experiments of this type are now being made by Japanese scientists.

Reaction to taste and "smell"

Taste and smell certainly play a very important role in the behaviour of fish; both senses are acute, but smell is particularly sensitive. Thus minnows have been trained to detect the smell of a single rinse from a water plant, even when this was diluted ten thousand times over; similarly eels have been trained to detect at least one chemical when it was diluted in more than a billion parts of water.

Closely related species of fish such as cod, haddock, coley and hake all have strong characteristic scents when freshly caught, and a fisherman could probably tell the main species in his catch blindfold; many herring fishermen can also smell the presence of shoals of herring in the sea. There seems little doubt that the fish also recognise the smell of their own and other species, and it has been suggested that this helps spawning herring to keep in concentrated shoals during darkness, when they can no longer see each other. Similarly, in experiments with roach kept singly in aquaria it was found that they remained near the water-inflow when this water came from tanks containing other roach, but when normal tap water ran into the tank the fish were uninterested in the inflow, and it seemed that the roach were attracted to the scent of other roach.

Smell and taste obviously play all-important roles in orientating the feeding migrations of fish; thus smell probably guides predatory fish to the smaller fish on which they prey. Feeding herring similarly concentrate on dense patches of zooplankton rich in oils, which they may detect at a distance; smell may also help flatfish to aggregate on patches of sea-bed richly populated with the worms or shellfish on which they feed, either by the odour of these animals themselves, or perhaps by the odour of the soils in which they are living.

Strong smell

Most spawning fish release their eggs and sperm directly into the sea where fertilisation occurs, and these may also have a characteristic odour which could help to guide other ripe fish to the spawning concentration. In a case like the Lofoten Island cod spawning, where something like 15,000 tons of eggs and sperm are released into the sea during the spawning season, such

an odour could be very strong and might be carried considerable distances by the currents before it became too weak to be detected. Many animals produce special scents when approaching their mating condition and probably many ripening fish also have special scents, but as yet there is little information on this; the production of an attractive scent on ripening could help explain why many fish, such as herring, tend to form bigger and more concentrated shoals as they mature prior to spawning. Such odours have the additional disadvantage that they may simultaneously guide carnivorous fish to the spawning grounds, so that the same odours which may attract ripe herrings to form spawning shoals could also guide whiting and haddock to the grounds to feed on the spawn, or cod to feed on the spawners themselves.

A good decoy?

It seems quite feasible that artificially produced scents could be used to decoy and trap fish, either by producing substances containing the essentials of the smell of the food of the fish, or, in the case of ripening or spawning fish, by using an artificial sexual scent. To do this would mean considerable biological research and complex biochemical analyses of the suspected attractant substances, but already some work of this type has been started with grey mullet and trout. Similar methods have been used to isolate and analyse the chemical basis of the sex scent of the gypsy moth, a serious pest of fruit and woodland trees; this chemical can now be manufactured and is used to attract the moths into traps; the chemical involved is 10-acetoxy-cis-7-hexadecen-1-ol, which means little to the average human, but is presumably loaded with meaning for gypsy moths!

Future research and applications

In order to analyse the factors which produce fish concentrations we need to have detailed information about the conditions in the areas where such concentrations normally occur, and then to determine the particular features of the situation which appear to be critical in concentrating the fish. To decide which are these critical features also requires a fuller knowledge of the behaviour and the capacities of the sense organs of the fish; in many cases this can only be obtained from further experimental studies. From

the point of view of the practical fisherman, such studies could lead directly to a better understanding of the behaviour of the fish, why they accumulate in particular areas and, conversely, why the fish "take off" on occasions; this knowledge could also help to predict where new concentrations might be found.

Use thermometer!

Modern echo sounders provide a relatively easy method of locating concentrations of some fish, but particular environmental features can also guide fishermen to the most likely areas in which to find such concentrations, and so reduce the amount of searching in unlikely areas. For instance, the distribution of herring between Norway, Iceland and Faroe is fairly closely related to sea temperatures, so that the judicious use of a thermometer could be of considerable help. In the same way, a simple sea-bed thermometer used in the areas of the Arctic cod and haddock fisheries could reduce the amount of searching done by fishing vessels, particularly in "warm" or "cold" years when the fish are not on their normal grounds in quantity.

Experimental work may also lead to the development of new methods of catching fish with artificial lures. Lights have been used extensively in different parts of the world to concentrate fish to provide good catches, but other possible means of attracting fish do not appear to have received so much attention. It might be possible to use hydrophone recordings of the calls of ripe or spawning fish to attract fish into nets, but this is obviously a rather sophisticated method, and much simpler techniques could be employed, particularly those using chemical lures. Lobsters and crabs are attracted by the scents from dead fish, and in recent years extensive research has identified most of the early decomposition products of fish meat. It should not be a difficult matter to incorporate some of these chemicals into wax or plastic blocks from which they are slowly released into sea water, and to test these artificial baits in crab-pots. More studies would be required to determine the nature of the essential attractive chemicals in the smell of mussels or rag worms, for example, but once discovered it might well be possible to incorporate them into plastic baits for lines, which would then last much longer than the fresh

animals; whilst a few extra-strong artificial baits on a long line might be used to produce a stronger taste or smell to attract fish to the line from greater distances. This type of research might yield rapid benefits to some branches of the fishing industry.

Until relatively recently fisheries research has been largely directed towards assessing the size and distribution of different fish stocks in order to determine the most efficient levels at which to fish them. This alone has taken many years of careful work on the feeding, growth, migrations and spawning of the fish, so that little time and few facilities have been available to carry out detailed experiments on fish behaviour. Such studies are now beginning in a number of countries and promise to yield results which will be of considerable value both to the fisheries scientist and to the practical fisherman.

(World Fishing,

London,

June, 1963)

FINDING MORE ABOUT WORLD'S LEAST KNOWN WATERS

Discovery is Almost Ready

Discovery, the Royal Research ship, should be ready before the month is out to sail from her base in Plymouth to make her contribution to the International Indian Ocean Expedition, a mission to find out more about the world's least-known waters.

Further four-bladed propeller trials in the Atlantic will be conducted before she leaves.

Tests for the British Ship Research Association with a five-bladed screw were "rather inconclusive," said Dr. Henry Herdman, the scientist responsible for her.

The shakedown cruise to Teneriffe which brought her back to Plymouth in March also revealed difficulties with winches which have been returned to manufacturers for alterations. As soon as these details have been settled, and the last of her intricate equipment fitted and stowed, Discovery should be ready to embark on the work for which she was built in Aberdeen last year.

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Complex Programme

She has a complex programme. She was to have spent 16 months with the expedition, but now will return to Plymouth in December for refit and change of scientific equipment, returning to the Indian Ocean in January next for a further eight months.

Mr. Ronald Currie, head of the biology department of the National Institute of Oceanography, who will lead the scientific staff, said they will use the voyage to Aden to familiarise themselves with the ship, making observations in the Red Sea.

Its deep water is relatively warm and they intend to compare its fauna - such as deep-sea fish, prawns, squids and jellyfish - with the waters of the Arabian Sea at similar depths.

Discovery will leave Plymouth with a scientific staff of 16, drawn from all over the country. When she reaches Aden two more scientists will join her.

The expedition hopes to cast further light on the find by a Russian freighter in the Arabian Sea in 1957 of dead fish equivalent to the world's total catch. Recent Soviet observations have shown a layer of the sea between some 600 ft. and 3,000 ft, in which little oxygen exists.

In the upper part of the layer, hydrogen sulphide, in which fish cannot live has been found. It is also known some algae emit toxins poisonous to fish - another possible cause.

Mr. Currie thought the likelihood of finding unknown species of fauna was small.

Unique Features

Next year two surveys of the whole Arabian Ocean are planned to discover water movements and distribution of chemical properties and animals. Discovery will do one survey in each monsoon.

"The Indian Ocean has unique features which make it extremely interesting scientifically," said Mr. Currie. "It is surrounded by countries in which malnutrition is

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prevalent because of lack of protein. The expedition hopes to find potential fisheries which will help to alleviate it."

Mr. Currie has carried out research in the Indian Ocean twice before - in Discovery II in 1951, and in the Royal Research Ship William Scoresby in 1950. He said the new ship would work in about 1,500,000 square miles of sea between the coasts of Africa, Southern Arabia, India and the Equator.

Discovery's command has just changed for Capt. David Evans, who was to have taken her on the expedition, is entering hospital for observation.

The new master is Capt. Cyril Alexander, aged 57, who lives at Winterborne Stickland, in Dorset.

(Fishing News, London, 17 May, 1963)

SOVIET FISHING FLEET LARGEST IN WORLD

The Russian fishing fleet is the largest in the world, according to the Chairman of the State Fishing Committee.

In an address before a conference of workers of the fishing industry in Riga, Latvia, the Chairman said that this fact has been acknowledged by the United States and Norway, both countries with highly developed fishing industries.

He claimed that the Soviets have modern vessels which can catch and process fish, whales and other marine life over a period of six or more months without entering port. Many of their new vessels are equipped with refrigeration which enables them to operate in both the equatorial Atlantic as well as in the North Atlantic, Arctic and Antarctic.

In the next few years, he revealed, the Soviet fishing fleet is due to be supplied with modern refrigerator ships and floating factories. Most are to be of Soviet construction. However, some of the new vessels will be made under special agreements in West Germany, Denmark

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Norway and Japan. These will include big whale factoryships, fish processing refrigerator ships and others.

The Chairman said that the large Soviet ocean fishing fleet enables the Soviets to catch up to 4.2 million metric tons (9,300,000,000 pounds) of fishery products at the present time.

(Western Fisheries, Vancouver, March, 1963)

SCIENTISTS LEARNING TO SPEED UP FISH GROWTH.

Scientists are learning how to speed up the rate of growth and ensure maturity of fish stocks at an earlier age, Dr. John L. Kask, chairman of the fisheries research board of Canada told a panel discussion at the annual meeting of the Fisheries Council of Canada last month.

Through studies on fish hormones and nutrition, he said, Pacific salmon are now being kept alive long after their spawned-out brethren have died. This means that these salmon could begin another life cycle and are also sexually mature before they normally would be.

The FRB chairman added that "we are now getting the individual organism under command by selective breeding of the types we want. This could lead to a fish cultural type of activity rather than fish hunting activity".

(Western Fisheries, Vancouver, May, 1963)

THE LARGEST FRESHWATER FISH

The world's largest true freshwater fish is the Pirarucu (Arapaima gigas) found in the Guianas and the Amazon Basin in South America. This fish is said to reach a length of 15 feet and a weight of more than 400 pounds. Another contender, the Asiatic sturgeon (Acipenser huso) is not a true freshwater fish, as it lives in the sea and returns to the rivers only to spawn. Reaching a length of more than 14 feet, it often weighs close to 2,000 pounds.

(Sea Secrets, Miami, February, 1962)