

FISHERIES DEPARTMENT, WESTERN AUSTRALIA

MONTHLY SERVICE BULLETIN

Vol. III, No. 9

September 1, 1954

STAFF NOTES

The Superintendent, Mr. A.J. Fraser, the Clerk-in-Charge, Mr. B.R. Saville and Technical Officer J.S. Simpson, together visited Mt. Barker, Albany and Pemberton from August 27 - 30 on trout acclimatisation. They attended the quarterly meeting of the Trout Acclimatisation Council of W.A. at Albany and the annual meeting of the Pemberton-Warren Trout Acclimatisation Society at Pemberton.

The Superintendent will start annual leave on September 4 and recommence duty on September 20.

Inspector W. Davidson will commence annual leave on September 2. He intends to holiday in Sydney.

Messrs N.E. McLaughlan and J.C. Thair have been promoted to Inspectors, Grade 2, Class G-II-1 as from June 15, 1954.

Mr. B.K. Bowen of Head Office has been appointed to Item 1618, Class C-II-1 as from June 30, 1954.

Inspector N.E. McLaughlan, with Cadet-Inspector D. Wright as crew member, brought the p.v. "Kooruldhoo" to Fremantle from Geraldton on August 27. She will be refitted immediately for the southern crayfish season commencing about December 1.

Inspector A.J. Bateman commenced annual leave on August 16, and is due to recommence duty on September 6.

Inspector J.C. Thair will start annual leave on September 6.

Technical Officer L.G. Smith has recovered from his operation and will recommence duty this month.

Cadet Inspector D. Wright commences annual leave on September 27. He proposes to spend his vacation assisting at the Pemberton Hatcheries.

OBITUARY

Mr. John C. Adlard, one of this State's best-known trout anglers, died on August 16. Mr Adlard, who for many years was modern languages master at Perth Modern School, was a particularly keen devotee of the sport of Isaak Walton, and one season a few years ago he grassed over 100 trout in the Pemberton district.

Mrs. Margaret A. Kelly, mother of the Minister for Fisheries (Mr. L.F. Kelly), died on August 18, aged 82. The sincere sympathy of the staff is extended to Mr. Kelly and his family.

PERSONAL PARAGRAPHS

The Commonwealth Director of Fisheries (Mr. F.F. Anderson) paid a flying visit to Western Australia about mid-August. The primary purpose was to inspect the Albany station of the Cheynes Beach Whaling Co. Pty. Ltd.

A visitor to Perth for the meeting of the Pan-Indian Ocean Science Association was Mr. Gilbert P. Whitley, Curator of Fishes of the Australian Museum, Sydney, and one of our leading ichthyologists. Mr. Whitley will best be remembered in this State for his work on sharks during the war years. He was personally

MINISTERIAL DIRECTION TO LICENSING OFFICERS

The Minister for Fisheries, in pursuance of his powers under Section 17 of the Fisheries Act, 1905-1951, has issued the following additional direction to licensing officers :-

A professional fisherman's license shall not be granted or renewed in any case where the applicant has been convicted of stealing fish or fishing equipment.

(Addendum to Monthly Service Bulletin
Vol. III, No. 9. September 1, 1954.)

associated with the tests conducted in Shark Bay to determine the efficacy of new shark repellants developed for use by Naval, Army and Air Force personnel who as a result of enemy action found themselves in the sea.

Principal Research Officer D.J. Rochford and Senior Research Officer J.M. Thomson of the C.S.I.R.O. Division of Fisheries were in Perth during August. Mr. Rochford came for discussions with officers associated with the Division's estuarine hydrobiological programme, and to attend the meeting of the Pan-Indian Ocean Science Association. Mr. Thomson, who in company with Senior Inspector J.E. Munro visited Albany, Bunbury and Mandurah, was here to discuss the initiation of a programme of estuarine fish investigation.

Captain Roy Downey, skipper of the C.S.I.R.O. Division of Fisheries Research Vessel "Derwent Hunter", now operating in the Tasman Sea and Bass Straits, is revisiting Western Australia on leave.

Mr. K. Godfrey, Technical Officer of the Division of Fisheries, who was operated on at Onslow in July, has made an excellent recovery, and expects to join "Lancelin" on September 6. Mr. R.W. George, research officer, is relieving Mr. Godfrey.

Mr. W.B. Malcolm, research officer, Division of Fisheries, visited the Division's headquarters at Cronulla, N.S.W., during August. He will return to Perth early in September.

Dr. K. Sheard, senior research officer, Division of Fisheries, was convener of Section F (Geography and Oceanography) at the recent meeting of the Pan-Indian Ocean Science Association.

Our congratulations are extended to Mr. John Calaby, of C.S.I.R.O. Wildlife Survey Section, and Mrs. Calaby on the birth of a son (David) on August 14.

Mr. Fred Fair, a tuna fisherman of Melbourne, called on the Superintendent while on a business trip to this State recently. Mr. Fair is the owner of two tuna boats, "Fair Tuna" and "Fair Venture." During his stay in Western Australia, Mr. Fair spent several days at Carnarvon.

RESEARCH ON ESTUARINE FISH

In conjunction with this Department, the C.S.I.R.O. Division of Fisheries has started a new programme of research into the estuarine fisheries of Western Australia. The main objects of the research are to answer the two questions most frequently asked by the fisheries administrators - (1), At what size does each kind of fish spawn? and (2), How long does each species take to grow to spawning size?

Many people can already give us the answers to the first question; the trouble is that if twenty different people are asked we get twenty different answers. The fisheries administrator wants to know exactly at what size the majority of fish become mature. The increasing size of the gonads does not necessarily indicate that spawning is near. The roe of some fishes starts to expand months before the spawning season; in others development is much more rapid.

The size of eggs varies enormously. Mullet and yellow-eye mullet for instance, have small eggs when the roes are fully mature, but eggs of similar size in garfish or cobbler are far from ripe. A roe that looks tight with eggs and "ripe" may yet be several weeks away from spawning. Only examination under a microscope will show whether the fragile tissues holding the eggs are breaking down ready for shedding.

The growth rate of some fishes can be checked from growth marks on the scales. The scales are not satisfactory in others, but the otolith (an ear bone which helps the fish to stay right way up) may have similar marks indicating annual growth. In other fishes marks on the gill cover, or rings seen on breaking the fin spines, can be used for age determination. Scales are the simplest to take, but where these are unsatisfactory other methods can be used.

The feeding habits of the fish will be studied. Hydrological conditions in Western Australian estuaries are different from those in eastern Australia, so that a comparison of the same or similar species in regard to body characters, rate of growth, time of maturity and

feeding habits will be of importance in deciding whether similar controls are desirable on both coasts.

Technical Officer L.G. Smith will be in charge of the field work to be undertaken by departmental officers.

PARLIAMENTARY QUESTIONS

The following extracts from "Hansard" relate to questions asked in Parliament and answered by the Minister for Fisheries or on his behalf -

August 4, 1954

"CRABS"

As to Swan River Population

Hon. C.F.J. NORTH asked the Minister for Fisheries:

- (1) Is it known now why the crabs failed in the Swan River last summer?
- (2) Are the prospects any better for 1954-55?

The MINISTER replied:

(1) The relative scarcity of the blue manna crab in the Swan River during the 1953-54 summer was not altogether expected. The normal habitat of this creature is in the marine zone, in onshore waters off the coast, but numbers do enter the estuaries at such times as the salinity approximates that in outside waters. During the winter, the salt water in the estuaries is overlain by large bodies of fresh water, with the result that the former becomes stagnant, a condition which is evidently unattractive to crabs, as the bulk of the population then migrates to the freer, more saline, waters outside. When the winter rains are abnormally heavy or prolonged, the stagnant condition of the underlying salt water in the estuaries may persist well into the summer,

and at such times the estuarine population of crabs is considerably reduced.

The 1953 winter was not abnormal, although the rains finished rather early. Except for one or two small pockets in the vicinity of Applecross no stagnancy was observed in the salt waters of the Swan after Christmas, and that is why the scarcity of crabs was unexpected. No work on the biology or life history of the swimming crab has been undertaken in Western Australia, nor, indeed, has much been done anywhere in the world. All that can be said, therefore, is that conditions were apparently not suitable for good natural reproduction in the offshore waters in which spawning takes place.

The same set of circumstances appeared to apply also to the waters off Mandurah, by reason of the fact that crabs were equally scarce in Peel Inlet last summer. At Bunbury the story was just the reverse. There crabs were present in almost pest proportions, which suggests that the conditions in the waters lying off Bunbury were ideal for natural reproduction. There is a possibility, of course, that for some obscure reason there was a wholesale migration of brood crabs to the Bunbury area, where conditions were evidently more attractive. However, in the absence of any scientific investigations of this creature - and having regard to more important investigational work needed in relation to our fisheries, no such research can be undertaken in the foreseeable future - what happens to the crabs at sea and in the estuaries can only be surmised.

(2) If the rains during the current winter persist until late in spring, as has happened before, there should be comparatively few crabs in the river next summer. If the rains finish early, the occurrence of crabs should be normal, subject, of course, to the intangibles mentioned in my reply to question No. (1)."

August 10, 1954.

"SHAGS

As to Habits and Habitat

Mr. LAPHAM asked the Minister for Fisheries:

(1) Would it be correct to state that shags are increasing greatly on the Swan River?

(2) What means of ascertaining this data is adopted?

(3) Is it a fact that shags are responsible for the destruction of large quantities of edible fish?

(4) Has the department carried out any investigation which would indicate the quantity and specie of fish mostly consumed by shags?

(5) Are shags common to any other parts of the world?

The MINISTER replied:

(1) No.

(2) Observations by departmental officers.

(3) No.

(4) Investigations lasting almost 12 months were carried out in 1936 by Dr. D.L. Serventy, then on the staff of the Biology Department of the University, and departmental officers. During the course of the investigation, hundreds of shags ~~on~~ as they are more correctly termed, "cormorants" were shot and the stomach contents examined. With the exception of cobblers, the number of sporting or commercial species in the stomachs was negligible. "Rubbish" fish like gobies, gobbleguts and hardyheads, were found almost exclusively. Twelve months ago, in my

office, several cormorants were dissected and the stomachs examined. On that occasion, it was found that there were no commercial fishes, but merely gobies and hardyheads. A few shrimps (not prawns) were also present.

(5) Yes. Their distribution is practically world-wide."

August 11, 1954.

"CRABS

As to Swan River Population

Hon. C.F.J. NORTH asked the Minister for Fisheries:

Will he have the following questions, which have been submitted by an interested elector, examined and advise the House whether they throw any further light upon the problem of the absent crabs last summer.

(1) Was the 1953 rainfall from May to August high?.

(2) Was water present of a salinity of 200 grains to the gallon for any time and to what depth.

(3) Were hauling seine sunk nets used in the Swan estuary from May to August, 1953?

(4) What weight of flounder, flathead and crabs was caught by licensed fishermen during those months?

(5) How long will a blue manna live in fresh water?

(6) Is it not likely that many undersized crabs were destroyed by being dragged from deep water, 20 feet or over, into shallows of 5 feet or less?

The PREMIER (for the Minister for Fisheries) replied:

(1) The rainfall for May-August, 1953, was a little more than 3 in. above average. June was particularly wet, being $4\frac{1}{2}$ in. above average.

(2) In May, 1953, there was no recording anywhere in the Swan River of water of salinity less than 200 grains per gallon. In June, however, as a result of the heavy run-off, the top layers to a depth of 6 to 8 ft. at the beginning of the month and of 12 to 15 ft. at the end of the month all read less than 200 grains. This condition was maintained to about the end of July, but in August the salinity increased markedly in the lower end of the system as the surface waters mixed with the underlying waters of high salinity.

(3) Although legal in the months of May, June and July, very little use is ever made of sunk hauling-nets in the Swan. Their use is prohibited in August.

(4) Flounder, nil; flathead, 985 lb; crabs, 3,050 lb.

(5) Not known.

(6) Although very few small crabs were in the river last summer, the department does not doubt the possibility of some less than the legal minimum size being destroyed in this manner, but it has no knowledge of it.

RAINBOW TROUT NETTED

Inspector A.V. Green of Bunbury has reported that on August 25 professional fisherman Tony Milic, of Augusta, caught a large rainbow trout in his set nets approximately a quarter of a mile south of Molloy Island in Hardy Inlet. The trout went 5 lb. 9 lb. on the scales and was in excellent condition. Very little fresh water was coming down into the

inlet at the time. This is probably one of the fish liberated from time to time in the Blackwood River, near Nannup.

FREMANTLE CRAYFISHERY INQUIRY

The Fishermen's Advisory Committee will meet in the Fremantle Courthouse on Thursday 14th and Friday 15th October, 1954, to take evidence regarding the conservation of the crayfish fishery in the Fremantle - Lancelin - Cervantes areas.

Any person desiring to give evidence is required to notify the Fisheries Department, Cliff Street, Fremantle (L1369) on or before Friday, October 8.

TROUT ACCLIMATISATION COUNCIL OF W.A.

A meeting of the Council was held in the Town Hall, Albany on Sunday, August 29. In addition to representatives of the various Trout Acclimatisation Societies and Messrs B.R. Saville and J.S. Simpson of the Fisheries Department, many interested persons from the Albany, Denmark and Mount Barker districts were present. The Superintendent, Mr. A.J. Fraser, presided.

After normal Council business had been dealt with, the meeting was opened to the general public and consideration was then given to an application by the Albany and Districts Trout Acclimatisation Society under Section 31 of the Fisheries Act, 1905-1951.

Considerable discussion ensued as to the name of the Society and the area in respect of which the Society should be registered. It was finally resolved, with the consent of the representatives of the Albany Society, that the Council recommend that the Albany, Denmark and Plantagenet Trout Acclimatisation Society be registered as a Trout Acclimatisation Society in respect to the whole of the area as comprised within the boundaries of the Albany Municipality and the Albany,

Denmark and Plantagenet Road Districts.

The Chairman intimated that the necessary papers would be prepared for submission to the Executive Council.

TROUT ACCLIMATISATION IN W.A.

During the visit of the Trout Acclimatisation Council to Albany the opportunity was taken to inspect three dams in the Mount Barker district in which trout were liberated approximately two years ago.

At the property of Mr. J. Rushton a highly coloured 12 inch male rainbow trout was taken from an old established dam of 1,000 cubic yards with comparatively clear water and a fair amount of weed growth. From a new 1,500 cubic yard dam on the same property with water of a milky colour and no weed growth, two female rainbow trout measuring $11\frac{1}{2}$ inches and $12\frac{1}{2}$ inches were taken. These fish, although in good condition, were very pale and similar in colour to the water.

From the old Mount Barker town dam, which appeared to have an abundance of weed growth and natural food, a male rainbow trout, twenty inches long and weighing 3lb. 12oz. was taken. This fish was a beautiful specimen and, it is believed, is the first one caught in this dam. Local residents claim that the dam was first stocked with fingerlings in November, 1952.

Mr. Curtis of Pingelly has reported that a spent female rainbow trout was recently taken from Brand's dam. This is very interesting information and further reports are eagerly awaited.

During August, Technical Officer J.S. Simpson with the assistance of Hatchery Curator, F. Shoobridge, delivered 28,000 trout fry to Albany. 17,000 were liberated in the Albany district and the balance were taken delivery of for planting in the Gnowangerup district.

Early in September a distribution of fry will be made in Perth, and to date 45,000 have been ordered.

MID-YEAR INSPECTORS' CONFERENCE

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

1. Marketing and Distribution of Fish.

The Superintendent outlined the marketing systems in Queensland and New South Wales. He also referred to the opinions expressed by various sections of the industry at the conference held in Perth on this subject. Although the opinions of the field staff were somewhat varied as to the best method of controlling the marketing and distribution of fish, it was the unanimous opinion of those present that the industry was not ready for legislation of this nature and that the matter should be left in abeyance for the time being.

2. Research.

The Superintendent said that we all realised the very important part that research work played in industry today and he was very gratified by the creation of a research division within the department. In future, partly because of a change in policy of the Fisheries Division of the C.S.I.R.O., most of the field work in Western Australia will be carried out by our own officers in the new division. The Superintendent added that these officers would be under his personal direction until such time as a qualified biologist is appointed to the vacant position of "Research Officer." It was proposed to embark on an extensive research program later in the year. In the meantime Technical Officer L.G. Smith would commence tagging mullet at Shark Bay, 2,000 internal belly tags, each bearing a serial number and an inscription, "Return to the Fisheries Department, Perth," having been purchased for this purpose.

3. Amendments to the Act.

It was agreed that provision should be made for regulations concerning the packing of fish for market - particularly in respect to the use of sterilised boxes of a standard size - the preparation of fish for market and the marketing of uncleaned cobbler. It was also agreed that the Act should be amended whereby the owner or skipper would be responsible for the licensing of all fishermen engaged on a licensed fishing boat.

4. Diaries, Reports etc.

The Supervising Inspector outlined the responsibilities of district inspectors in relation to the information contained in their diaries and reports generally. He also discussed the issue of licenses, motor mileage, fishermen's returns, telephone calls and referred to the discussion of departmental policy outside the Department. District Inspectors, he said, should instruct junior officers working in their district on departmental procedure in these matters.

5. Minimum Legal Length.

Several officers were of the opinion that the legal length of sand and school whiting should be increased to 9", yellow-eye mullet to 9½", ruff to 8" and snapper to 13". It was decided to :-

(a) Make check measurements of yellow-eye mullet at the Perth fishermarkets;

(b) Check departmental records in respect to the minimum lengths of whiting and ruffs, and

(c) Discuss with Mr. Malcolm of the C.S.I.R.O. the minimum length of snapper.

6. Second Schedule to Act.

It was decided to remove leatherjackets from the Second Schedule.

7. Dealers Returns.

The Superintendent said he was very concerned over the non-furnishing of these returns, especially as they were essential for the checking of statistical data. In future it would be the responsibility of the district inspectors to collect returns from all fish dealers in their districts and to forward them to head office.

8. Closed Waters.

Several officers were of the opinion that the water known as "Rous Head", Fremantle should not be closed to net fishing. It was agreed to make an inspection of the area concerned and, subject to a favourable report, action would be taken to cancel the existing proclamation.

9. Fish Tagging.

It was the general opinion of all district inspectors that the department should define a policy in relation to the method of securing fish for tagging purposes and also as to the method of payment to fishermen for their assistance. The Superintendent indicated that the creation of the new research division would overcome to a large extent many of the difficulties experienced in the past. He would, however, discuss the matter with senior officers of the C.S.I.R.O. and Technical Officer L.G. Smith who would be responsible for most of the field work involved.

10. New Patrol Vessel.

The Superintendent intimated that subject to Treasury approval of finance, it was proposed to construct a new patrol vessel during the 1954/55 financial year. The Harbour and Light Department had undertaken the construction of the vessel, which would be powered to give her a cruising speed of 12 knots. The vessel would be used mainly for patrolling the Abrolhos Islands.

11. Protective Clothing.

It was decided to leave this matter in abeyance until a decision is reached in the Arbitration Court in respect to an appeal by assistants of the chemical laboratories. Their claim would be submitted to the Court within the next two or three months.

12. Monthly Bulletin.

The Superintendent stressed the need of articles of common interest from district inspectors for publication in the bulletin. A little more effort in this direction would be appreciated.

13. Honorary Wardens Bulletin.

April 1 had seen the introduction of a departmental bulletin published quarterly for the information of Honorary Wardens of Fauna. It was also supplied to all Departmental officers.

The Superintendent explained that the reports submitted each quarter by Honorary Wardens were sifted and tabulated and a summary prepared and published in this new Bulletin. The Superintendent said that he was aware of the onerous volume of clerical duties which

the inspectors had already to perform, and he was loath to give them more, but the reports were extremely simple to prepare and he would appreciate all inspectors submitting one quarterly on their observations of fauna occurrences.

14. Professional Fishermen's Licenses.

The consensus of opinion was in favour of a reversion to the policy of granting licenses indiscriminately. After a very lengthy discussion, it was decided to defer further consideration of this question until the annual conference.

15. Venue of next Mid-Year Conference.

It was decided to hold the next half-yearly conference in Bunbury.

WIRE ROPES AND CORDAGE

For your information and guidance methods of arriving at the strengths of various kinds of ropes are set out below:-

Hemp Rope

For a rough method of finding the Breaking Proof, and Safe Working Load, of a hemp rope, up to 6-inch size:-

Square the size of the rope and divide consecutively by 3, 9 and 18. For instance 3-inch rope :-

<u>Breaking Load</u>	<u>Proof Strain</u>	<u>Safe Working Load</u>
$\frac{(3)^2}{3} = 3 \text{ tons}$	$\frac{(3)^2}{9} = 1 \text{ ton}$	$\frac{(3)^2}{18} = \frac{1}{2} \text{ ton}$

Sisal Rope

Same tables may be used as for hemp.

Coir Rope

Strength is $\frac{1}{4}$ of hemp rope of similar size, and the weight is about $\frac{1}{3}$ rd.

Extra Special Flexible Wire

Breaking strain equals (Circumference)² x 3.6 = result in tons.

Rigging Wire Breaking strain equals
 $(\text{Circumference})^2 \times 2\frac{1}{2} = \text{result in tons.}$

Flexible Wire Breaking strain equals
 $(\text{Circumference})^2 \times 2 = \text{result in tons.}$
 For hawsers above $4\frac{1}{2}$ inches the factor
 should be $2\frac{1}{4}$ instead of 2.

N.B. The safe working load of wire rope is generally
 about one fifth of the breaking strain.

CONVICTIONS RECORDED

July 1 to August 31, 1954.

Date	Defendant	Court	Charge	Result
31.8.54	Fitzgerald, J.	Geraldton	Undersize crayfish	Fined £2
do.	do.	do.	do.	" £5
do.	Whitfield, K.G.	do.	do.	" £4
do.	McKay, Alex	do.	do.	" £2
do.	Mullins, B.A.	do.	do.	" £2
do.	Valenti, Alfred	do.	do.	" £5
do.	Woolhouse, C.W.	do.	do.	" £7
do.	Litchfield, S.	do.	do.	" £2
do.	Bradley, W.	do.	do.	" £5
12.8.54	Broz, Miro	Perth	Undersize Fish	" £3
do.	do.	do.	do.	" £3

FAUNA CONSERVATION IN WESTERN AUSTRALIA

(The following paper was presented by the Superintendent to the Biological Sciences Section of the Pan Indian Ocean Science Association during its recent meeting in Perth).

In this very brief review of fauna conservation in Western Australia, I propose to confine my remarks to mammals (except whales, seals and other marine forms) and birds. In doing so I largely follow the Fauna Protection Act of this State, for in the definition of "fauna" only reptiles and frogs, in addition to the two groups named, are included.

Some difficulty is encountered by fauna conservationists in Western Australia in implementing conservation programmes. Although there is no overt opposition from the people as a whole, there is nevertheless widespread indifference to fauna conservation. At the same time, by some sections of the community, notably farmers and pastoralists, fierce opposition is frequently voiced to laws which in effect protect fauna which undoubtedly take heavy toll of crops, stock, pastures and property in certain areas. Western Australia's economy is predominantly agricultural, and any undesirable impact on agriculture is, they argue, detrimental to the State at large. It is, of course, a case of giving a dog a bad name, and because some protection is afforded to fauna which damage agricultural holdings, few farmers have any sympathy with fauna conservation at all, despite the fact that only a very small proportion of the fauna may be said to be harmful.

Today land settlement schemes involving the clearing of hundreds of thousands of acres of new country are being vigorously pursued. All this clearing is destroying natural fauna habitats, and the fauna is being driven to other areas, principally settled areas, in search of food. Old-established crops and pastures, and crops and pastures which new settlers are endeavouring to establish, are being actually damaged or seriously threatened by hordes of migrant fauna, and many farmers are indeed fighting a losing battle against their depredations. It is little wonder, therefore, that influential people, both in and out of Parliament, are clamouring for modification, if not actual repeal, of many of the fauna laws.

Another factor which makes fauna conservation difficult is the popularity of many of the birds and animals for both food and sport. Particularly in less settled areas, which in most cases are remote from towns and where diet variants are not easily obtained, settlers look upon it as a right to take any fauna at all as food, and in actual fact one would be hard put to discover a plausible reason for denying them that right. Then there is the sporting shooter who does not readily accept curtailment of his activities. Both these classes have their supporters - some of them extremely vocal - and the matter of conservation is still further complicated.

A further very important factor is the large area of this State - almost a million square miles - and the relatively small population. It is just not possible for the State, with comparatively slender financial resources, to appoint sufficient personnel to provide even a modicum of supervision for most areas.

So by and large the problem of fauna protection in Western Australia is not an easy one. If little appears to have been achieved it must not be thought that a defeatist attitude has been taken up. On the other hand, there is much evidence that the Government is fully alive to the requirements of the situation, even if nothing spectacular has yet emerged. All sections of the community have a right to be heard, and their views weighed, and the best that can ever be expected in a State like this is the attainment some day of a proper balance between the needs of agriculture and the needs of conservation.

The fauna protection laws were first codified in 1912, when the Game Act was passed by Parliament. The very name of the Act is an index to the popular view of those days. All fauna at that time were regarded merely as game. Without any doubt the legislators and public of forty years ago would have regarded the present day concept of conservation as ridiculous. Protect game as game, by all means! Fish are protected so that better fishing will be available in the future, so why not protect game so that we shall have bigger and better game! But to conserve fauna, for the sake of fauna itself, or on purely aesthetic grounds, perish the thought! Our forbears were far too practical for that! At the same time, despite many shortcomings in the new

code (some amendments in 1913 did improve matters slightly), there were a few good features. It was possible to proclaim reserves for native game, to declare game strictly preserved in the whole or any part of the State, and to establish close seasons. In the majority of cases, however, because there was little or no supervision, many of the reserves were reserves in name only, and very little was done to ensure that close seasons were observed. True, hundreds of honorary guardians of game were appointed all over the State, but because they were almost entirely out of touch with the administration, from whom in any case they received little encouragement, they served no useful purpose.

For more than thirty years fauna conservationists struggled to make their voices heard and to have the rather inadequate legislation replaced by something better. At last, in the 1940's, a new spirit had been awakened in official circles, and the Government, by administrative action, set up a Fauna Advisory Committee to advise the Minister on all phases of fauna conservation. The personnel comprised the Chief Guardian of Game as Chairman, one man who was an authority on the marsupial fauna of Australia, and two noted ornithologists. Later, in order the better to co-ordinate the activities of the fauna protection and vermin control authorities, the Chief Vermin Inspector was added to the committee. Early in the life of the committee, the members became seized with the importance of habitat preservation and the initiation of investigations into the life histories of different fauna. Its recommendations included the appointment of at least one full-time guardian of game, and revision of the existing code. Both recommendations were accepted by the Government.

The code was wholly re-cast and modernised with the passing of the Fauna Protection Act, 1950. The date of commencement was fixed as July 1, 1952. The name of the Act is itself evidence of the change of heart of the legislature in the four decades between the enactment of the original and the existing codifications. Conservation is now the keynote of the legislation. Fauna is no longer merely game, and the policy of the administration has changed accordingly. Although the new law did not go as far as strict conservationists would have liked, it must nevertheless be taken as an earnest of the new concept which has been developed in the

community by bodies like the Royal Society of Western Australia, the Royal Australasian Ornithologists Union and the Western Australian Naturalists Club; all of which have played their part in giving publicity to conservation principles.

The old advisory committee was reconstituted by the Fauna Protection Act and given statutory authority under the name of the Fauna Protection Advisory Committee. Its personnel was widened, and now consists of the Chief Warden of Fauna as Chairman, the Chief Vermin Control Officer, the Conservator of Forests and three other persons at least one of whom must be a person, other than a civil servant, who has a wide, practical knowledge of the native fauna of Western Australia. Its duty is to inquire into and report to the Minister on any matters referred to it by him or by the Chief Warden of Fauna in relation to the conservation of fauna in the State, and on the effect or likely effect on the conservation of native fauna of the importation of fauna from outside the State. The Committee is therefore the body to whom the Minister and the Chief Warden turn for advice when framing fauna conservation policy.

The Act provides that all fauna is protected unless the Governor declares it to be unprotected, although because of the specific provision that the Act shall not apply to any fauna which has been declared vermin under the Vermin Act, the power of the administration is not absolute. At the same time, the appointment of the Chief Vermin Control Officer as a member of the advisory committee, and of the Chief Warden of Fauna as a member of the Agriculture Protection Board, which administers the Vermin Act, has resulted in much better co-ordination and reduced overlapping as between the two somewhat conflicting authorities.

The Governor is empowered to proclaim open seasons and close seasons and to declare any Crown land to be a sanctuary for fauna. In the Minister reposes the power to issue licenses to take fauna, whether protected or unprotected, and to carry out investigations into the conservation and protection of fauna. He is authorised to enter into agreements with landholders for the use of their lands as sanctuaries.

Certain government employees, e.g., inspectors of fisheries and police and forest officers, are ex officio wardens of fauna, and a number of interested citizens have been appointed honorary wardens. The powers of the latter, while they fall short of those of wardens, are still reasonably wide.

The present situation in Western Australia is that the new fauna protection law has not been in operation sufficiently long to have had a fair trial, although the indications are that progress is now possible. The clothing of the advisory committee with statutory powers encourages the belief that it will achieve more than the old non-statutory body was able to do. Already it has strongly expressed the view that the preservation of the habitat, and for this end the creation of a number of suitable sanctuaries, is the only realistic approach to the question of fauna conservation in this agricultural community. The Committee believes that now, before all Crown lands are alienated - and alienation is proceeding apace - there should be a survey of future conservation needs. Any land which will be required either now or in the future should be set aside forthwith, and so tied up as to render future alienation difficult, if not impossible. It holds the opinion that national parks which are also fauna sanctuaries should not suffer through being "improved" by their controlling bodies, generally as an excuse to raise funds for further "improvements". Furthermore the "development" of certain coastal plain country by the draining of swamps for agricultural purposes should, the Committee considers, be sternly discouraged. They are the natural breeding places of many varieties of waterfowl.

The Committee and the departmental administration are working in very close co-operation with the officers of the Wildlife Survey Section of the Commonwealth Scientific and Industrial Research Organisation, several of whom are located in Western Australia. Greater Treasury appropriations have made possible the appointment of additional officers, and enabled the administration to commence a wild-duck banding programme. Some publicity in regard to the need for better conservational measures has also been given. What will be the final outcome, only the future can tell.

FAUNA COMMITTEE'S MURCHISON SURVEY

Mr. G.E. Brockway, Dr. D.L. Serventy and Mr. A.M. Douglas, members of the Fauna Protection Advisory Committee, accompanied by Mr. C.A. Gardner - Government Botanist, H.B. Shugg - Secretary, Technical Officer J. Traynor and Fauna Warden F.A.L. Connell, left Perth early on Friday August 6 and reached Geraldton that evening.

Next morning, accompanied by Inspector S.W. Bowler, the party left Geraldton and travelled via Northampton and Linton Station, to the Murchison River arriving at 3.30 p.m.

On Sunday the 8th members of the Committee were conducted to the north bank of the river by the Fauna Warden and spent some interesting and instructive few hours examining the botanical aspects of the area and the insectivorous infestation. In the afternoon a trip was made along the south bank of the river to Bulli Pool and Murchison House Station.

On Monday the 9th, separate parties inspected the areas further south and were impressed with the possibilities of large reserves both as sanctuaries for conservation and controlled enjoyment of the sporting possibilities.

The Committee returned through Northampton and Geraldton on August 10 to Dongarra where Mr. R. Perry joined the party in place of Mr. G.E. Brockway who had urgent work elsewhere. The party then proceeded via Three Springs to the War Service Land Settlement Branch's Project. Through the courtesy of the Branch and the Field Superintendent, Mr. Leslie, accommodation was made available.

The next morning, August 11, Mr. Gardner accompanied by Mr. Leslie made an inspection of the country around the project to ascertain what poison plants were in the area. He then conducted the party to soaks known as Three Springs, to Stockyard Gully and finally to Cockleshell Gully where a camp was made on the property of Mr. F. Gregson.

On Friday August 13 the party returned to Perth via Dandaragan and Caro and Mimegarra Stations.

OPEN SEASON FOR KANGAROOS

The Lieutenant Governor in Executive Council recently proclaimed an open season for grey kangaroos in the following road districts:

Gingin, Preston, West Arthur, Busselton, Balingup, Upper Blackwood, Kojonup, Augusta-Margaret River, Nannup, Manjimup, Cranbrook, Plantagenet, Denmark, Albany and all that part of the Woodanilling district west of the Great Southern Railway.

The duration of the season is from August 1 to November 30, 1954. During this period kangaroos will not be protected in those areas but anyone desiring to sell the skins will require a license. A farmer whose property is being damaged can obtain the usual license for 5/-d but a hunter's license is £2. Anyone desiring to take a few kangaroos for food during this open season can obtain a food license for 5/-d which would authorise them to sell 52 skins per year.

The value of the open season to the farmer lies in the fact that he need not bother to secure a license himself; instead he may call in a licensed hunter who could shoot on his property or on vacant Crown land. The declaration of the open season was delayed for consideration of an objection that indiscriminate shooting flourished during such a period. Any reports received by Inspectors of such occurrences should be relayed on to Head Office.

The open season does not affect the protection of kangaroos in flora and fauna reserves, timber reserves, State Forests and National Parks in the above mentioned districts nor any other reserves for which by laws have been gazetted protecting fauna. It remains an offence to take or attempt to take kangaroos from such places without written authority.

OPEN SEASON FOR EMUS

In a recent Government Gazette emus were declared to be not protected in the Albany, Denmark, Plantagenet and Manjimup road districts for six months as from August 1, 1954. During this period any person may take emus on Crown land or on private land with the owner's permission. As in the case of kangaroos protection is not lifted in flora and fauna reserves, timber reserves, and all State Forests and National Parks and any other reserves under the control of a board or other body which has gazetted regulations protecting fauna.

OPEN SEASON FOR FINCHES

As conditions in the Kimberleys were reported to be normal, the open season proclaimed this year is for the usual period from September 1 to December 31. During this period people desiring to trap any of our indigenous finches for gain or reward may obtain a license providing they satisfy the Chief Warden of Fauna that their trapping techniques and holding facilities are of a sufficiently high standard. The fee of such a license is £2 but it does not relieve the holder from the necessity of obtaining separate licenses for each consignment of finches to be exported from the State.

DUCK BANDING

Technical Officer J. Traynor has made arrangements to commence banding operations at Glengarrie Station near Eradu in the Geraldton district this month.

Mr. Traynor has pointed out that if trapping is successful it will be the first time that ducks have been banded north of Moora. It will be interesting to discover whether birds from Geraldton migrate to the south or to the north, or whether they scatter indiscriminately as appears to be the case from the southern banding stations.

Recoveries: Since the publication of the last Bulletin the following bands have been recovered:-

No.	Date Banded	Place Where Banded	Date of Recovery	Place Where Recovered	Distance Travelled
			<u>Black Duck</u>		
2103	8/1/54	Karrinyup	Between Jan. and April	Found dead Hyde Park	Found by gardener
2093	do.	do.	do.	do.	do.
2293	25/1/54	Queen's Gardens	do.	do.	do.
2575	23/3/54	do.	do.	do.	do.
1785	21/4/53	do.	do.	do.	do.
1937	2/5/53	Karrinyup	do.	do.	do.

OUR FAUNA CHAMPIONED

When addressing the Pan-Indian Ocean Science Congress Dr. S.L. Hora attacked what he called our wanton destruction of kangaroos and emus. He expressed the view widely held overseas, that this State is a museum of living objects and our fauna should be counted among the wonders of the world and preserved for posterity. Dr. Hora's views should be treated with the utmost respect, as in addition to being qualified as the director of Zoological Survey of India he is also Secretary of the Indian Board for Wildlife and his opinions on the worth of our fauna are unsullied by familiarity. He has suggested that the State should set up an organisation to capture some of the surplus kangaroos and emus and export them to other countries where they would bring high prices. He warned Australia against such actions as the spreading of the kookaburra and the importation of rabbits and foxes and pointed out the tremendous amount of damage exotic fauna caused when once acclimatised in a new locality.

THE CLEARING HOUSE

New Type Fish Tag Used for Gray Cod

A new type of fish tag has been successfully introduced on the Pacific Coast in connection with researches on gray cod.

Instead of the usual pin fastener type of tag, Biological Station scientists recently tagged 300 gray cod with a marker held in position by nylon thread, allowing tag to float free of the fish's body. The thread is inserted by hypodermic needle.

Of recoveries to the end of May (7% of total number tagged) the scientists state that all fish were found in good condition and show no signs of permanent injury through the use of the new tag. One fish recovered had travelled 25 miles.

One of the difficulties in tagging this species has been the tendency of the fish to float after it has been tagged, due to an abnormal amount of air collected in the body after being dragged out of deep water. Scientists have got over this problem by making small incisions in the body of the fish, allowing the air to escape and the fish to return normally to their life on the ocean floor. No harm is done by this apparently.

("Western Fisheries", Vancouver, B.C. June, 1954)

Transparent Cans Have Many Advantages

Many consumers do not buy food canned in metal containers because they cannot see the contents. Glass jars have many disadvantages such as their heaviness and fragility. The new polystyrene cans are as transparent as crystal, very light, and have a remarkable mechanical resistance. A new patented tight-closing system makes possible the fabrication of transparent containers for food. The body and the top of the cans are molded. A groove all around the lid contains a thin rubber jacket. The body of the can has a rim near its edge. Sealing is done by a specially designed machine.

The top is pressed on the body and there is an instantaneous heat welding at some points. The can is opened simply by inserting a knife into the free space between the edge of the lid and the rim of the body and turning the blade slightly.

The use of this can is limited by the fact that polystyrene melts at a temperature above 176 degrees F. Heat processing is therefore impossible, but pasteurization is perfectly practicable. Most of the molds are destroyed by heating at 140 degrees F. and the spores are usually killed at 149 degrees F. The top is concave; as the cans are filled up to the brim, the air is completely removed when pressing the top for sealing, and this is very important for avoiding the development of molds and aerobic bacteria.

Heat sterilization at a high temperature is impracticable with today's plastic containers, but a new plastic material may be found allowing sterilization by means of ultraviolet radiations, X-rays, electrons or chemicals, associated with an aseptic canning process.

A big advantage of these cans is the elimination of the corrosion problem because the material is resistant to acids, alkalis and fat. They can be very useful for canning semi-preserves.

Tests made with plastic containers specially filled with fish to see the effect of the light have been very successful. If any difficulties having an actinic origin should occur with respect to preservation of food in the can, it would be possible to eliminate them by determining the responsible radiation and giving the polystyrene can a coloration to absorb the radiation.

(("Western Fisheries", Vancouver, B.C. June, 1954.)

Cutting of Fish Sticks Important Operation

No other food processing operation presents the cutting problem that exists in Fish Stick production. Every operation following the cutting of the sticks depends in large measure upon the accuracy with which the cutter has done its work. Speed in cutting is necessary to economical production. Dependability and

stamina of the cutting unit are of priceless value because failure of the cutting unit shuts down the entire production line. These conditions make the power cutter of outstanding importance in the fish stick industry.

The frozen blocks of fish are first reduced to slabs on the power cutting machine. The slabs are then cut to precise stick dimensions. The size and shape of sticks varies with the different processors from long slender sticks to short fat ones, or wide flat sticks. Whatever the shape, the stick dimensions must be held to very close tolerances in order to go smoothly through the dipping, crumbing and frying operations and to exactly fit the carton awaiting the sticks at the end of the line. Fish Stick cutting puts an unusually heavy burden on the power cutter. Iron and steel parts quickly rust and corrode. Experience shows that only stainless steel will stand up indefinitely under the extreme heavy duty of frozen fish stick cutting.

The necessity for keen, perfectly conditioned cutter blades presents a constant problem in maintenance. Blades, or saws as they are sometimes called, even of the finest tempered steel, are worn down quickly. They must be in perfect condition to deliver the sticks with the required precision and speed. An ample supply of perfect blades must be kept on hand ready for instant replacement. The blade manufacturer or reconditioner must be selected for his ability to supply perfect blades, in any quantity required, at all times.

Tests have revealed that ordinary power meat cutters do not fully measure-up to the requirements of this new power cutting job. Special design, ample power, rugged durability, ease of disassembling for frequent complete cleaning, absolutely non-corrosive materials and finishes, and specialised blades or saws are necessary for Frozen Fish Stick cutting. All electrical equipment on the cutter must be fully enclosed in a watertight housing. The unit must be able to operate 24 hours per day, if necessary, without failure - 16 hours is the standard day now in Fish Stick production. All this adds up to an ultra-modern specialized power cutting unit to meet the needs of the great new Fish Stick industry.

("Fishing Gazette", New York. June, 1954.)

Lobster-Tail Standards are Set up by New Zealand

With the object of increasing the sales of their fish products in the United States, the New Zealand Wholesale Fish Merchant's Association has voluntarily adopted the following standards for "Frozen Rock Lobster Tails".

1. They shall - (a) be clean and devoid of foreign matter; (b) not be soft-shelled or from a female in berry; (c) have the intestine completely removed; (d) be individually wrapped in cellophane or other approved moisture-proof wrapping material which completely covers all flesh exposed from the shell; and (e) be packed in containers which contain a net weight of not more than 30 pounds of crayfish.
2. (a) Containers containing a net weight of either 20 or 30 pounds shall be used provided that a uniform-sized box shall be used by each packer. (b) To allow possible shrinkage in transit each case of 20 lb. shall be packed with a minimum excess of 12 oz. (c) Containers shall be wire-bound or strapped with suitable wire or strapping. (d) Each container shall not be more than six inches across its narrowest internal dimension (e) Containers shall be clean, new, attractive in appearance and not likely to have any deleterious effect on the contents.
3. Crayfish tails shall have been processed - from crayfish which, following the removal of all intestinal parts, have been vigorously washed individually in clean water.
4. Crayfish tails shall - (a) be placed under refrigeration; fully prepared for freezing, within a period of two hours from the time of killing; (b) be reduced in temperature to not more than 20° F. within a period of 12 hours from the time of killing and (c) immediately thereafter be transferred to a refrigeration chamber the temperature of which shall be held at not more than 10° F. constant.

When the exporter is satisfied that he has prepared and packed his lobster tails in conformance with the above-listed requirements, then and only then may he place on the pack the approved certification label of

of the association which reads:-

"These brand New Zealand rock lobster tails are packed in conformity with the standard laid down by the New Zealand Wholesale Fish Merchant's Association."

("Fishing Gazette", New York, June, 1954.)

Better Quality in Fish

The following has been extracted from the tenth and final of a series of articles on methods of improving the quality of fish by Dr. C.L. Cutting of the Humber Laboratory of the Torry Research Station, England. The points he makes here are an excellent summary of his previous articles and represent perhaps the best informed advice available at the present time on this subject.

To the question "Can the quality of fish be improved?" Dr. Cutting says "yes" if:-

AT SEA:

1. Fish is gutted, washed and got below deck within a few hours.
2. More shallow shelving is employed with ice on top of the fish and less bulking.
3. Plenty of ice is used particularly against the side of the ship.
4. Trips are shortened or fish frozen at sea in the proper manner.
5. Valuable species are boxed and iced at sea wherever possible.
6. Technical instruction on the principles underlying the handling of fish aboard the vessel is incorporated in examination for mates.

ON THE MARKET:

7. Ice is used on top of the kits in warm weather.
8. Fish is condemned not on its quality on inspection, but on what its quality would be expected to be with reasonable treatment by the time it reaches the consumer, say 48 hours later, at the earliest. (The possibility of doing this is being actively pursued by the White Fish Authority in conjunction with the Health Authorities).

AT THE MERCHANTS:

9. Fish is kept covered with ice whilst awaiting filleting, etc.
10. Amount of fish held over is minimised, and in any case such fish to be carefully chilled with ice.
11. More ice and less fish is put into boxes in hot weather.
12. Fish or fillets are pre-chilled in iced water before icing up in boxes prior to despatch.
13. More reliance is placed on better quality frozen fish (sea-frozen where possible).

AT THE CURERS:

14. Only the best rather than the poorest qualities are smoked. (This is, of course, already the practice of the best curers).
15. Fish is cured to such an extent, depending on the weather, that, with reasonably fresh raw material, the product will not deteriorate appreciably within a normal distribution period, of say four days after production (i.e. more attention to making a good cure).

AT THE COLD STORES:

16. Lower temperatures are used preferably not higher than - 20^oF, or else the time in store shortened.

IN TRANSPORT:

17. More efficient chilling is provided during transport, as, for example by icing on top of the boxes.

AT THE RETAILER'S SHOP:

18. Fish is handled hygienically and chilled during display.

19. Too much is not expected of a "frig."

20. Smoked fish is ordered daily, not weekly.

GENERAL:

21. More mechanisation of handling ice and fish is arranged with a view to avoiding damage to fish by bruising and contamination with dirty surfaces.

22. More attention is given by sellers to testing the palatability of the products handled.

23. More reliance placed on good quality frozen fresh fish (e.g. sea-frozen in the case of white fish in the near future it is hoped).

24. More attention is paid by industry to research, and more reliance placed on properly conducted tests of new procedures.

25. More scientists are engaged to discover new facts, and more technologists to apply existing knowledge to the solution of problems of the fish trade.

26. Increased efforts are made to encourage the spread of education in the principles and practice of fish handling and hygiene amongst the personnel of the industry. (The National College of Food Technology already runs part-time fish trade craft courses for retailers in the London region and is willing to give the benefit of its experience to Local Education Authorities setting up similar courses. In addition, there is a full-time, two years' advanced course in Food Technology, intended for training men for production and management posts of which a few fish concerns have already taken advantage).

("The Fishing News", London, July 23, 1954.)

Rubber Dinghies Now Approved by Transport Ministry

The Ministry of Transport has approved the use of inflatable rubber dinghies as ancillary life-saving apparatus now used by the fishing fleets.

A number of these dinghies, made by the R.F.D. Company Ltd., of Godalming (Surrey), were demonstrated before ship-owners, Admiralty officials, and marine technicians, from the Union Castle liner Durban Castle in King George V Dock, London, last week.

Packed in a valise each dinghy, accommodating six, 10 or 20 persons, was thrown from the promenade deck of the Durban Castle and inflated as for an emergency.

A pull on an operating line from the ship actuated the mechanism of the gas cylinder and the dinghy burst out of its valise, and was ready to be boarded on the surface of the water in approximately 30 seconds. Seats were inflated in another 60 seconds. A protective covering automatically erected during the inflation, has an inner and outer skin enclosing a layer of still air, thus, it is claimed, creating an internal thermal barrier against cold winds and the sun's rays.

The floor is double and also inflatable, thus increasing buoyancy and providing the occupants with insulation from the chilling effects of the sea. An emergency pack aboard the dinghy includes food and water, medical supplies, signalling apparatus, lights and even a pack of playing cards.

Packed dimensions of the 6-seat dinghy, recommended as suitable for most fishing craft, complete in valise, is 30 inches x 17 inches. Being so compact, they can be stowed on deck in a very small space.

The 6-seat and 10-seat dinghies, with their emergency packs, can be handled and launched by one man, but the 20-seat type requires two men for easy handling. Circular in form, the dinghies, when deflated, have canopies of flame orange and hulls of dark steel. Flame orange has proved the most efficient colour for search and rescue. An automatic water operated recognition light is in the roof.

An earlier design, the Q.N. dinghy, was developed to meet the urgent needs of the Icelandic fishing fleets, and as Fishing News readers know several rescue operations have been achieved by its use, the most recent being the rescue of the crew of eight of the Icelandic trawler *Gladir*, who were picked up in their dinghy "in furious weather" by the British trawler *Hull City* after being adrift 22 hours in winds up to Force 10. Altogether, it is stated, the lives of 22 Icelandic fishermen have been saved by the R.F.D. Company's dinghies in the last two years.

After the launching, men from an inflatable Zodiac boat - also made by the R.F.D. Company - boarded the 10-seater dinghy from a jumping ladder, and showed how one man could right and board the dinghy easily and quickly from the water.

("The Fishing News", London, July 23, 1954.)

Tracking Down Drifting Oil

Several of the "drift" cards in plastic envelopes, dropped early in May in the Atlantic by the R.A.F. for the National Institute of Oceanography have been found and returned to the Institute. The cards are used to check the speed and direction of ocean currents which may carry oil patches to the sea shore. Each of the finders has been paid the promised reward of 2/6d.

First card received was picked up on the S.W. coast of Iceland; it had drifted about 320 miles at a speed of at least seven miles per day. Other cards have since been found in Iceland, and a few on the west coast of Ireland and in France, but up to last weekend no cards had been received from the U.K. It is believed that some are close to our shores or have already been washed up and await a finder.

A White Paper containing the texts (in English and French) of the Final Act of the recent international conference on sea pollution has been presented to Parliament by the Minister of Transport.

("The Fishing News", London, July 23, 1954.)