WATERFOWL RESEARCH

IN

WESTERN AUSTRALIA

by Dr T. L. Riggert

The Department of Fisheries and Fauna commenced its first waterfowl research project in 1952, when Mr Joe Traynor captured and banded ducks in Queens Garden, Perth. In the following fourteen years nearly 10,000 ducks were banded and released throughout the South-West of Western Australia. Volunteer banders such as Mr N. Beech, Mr L. Bell, Mr D. Moir, Miss C. A. Nicholls, Mr B. J. Paully, Mr T. J. Paully, Mr A. Robinson, Mr N. Stewart and many others worked individually to assist the Department with this project. Much of this basic information has been utilized to formulate the present-day waterfowl research programmes.

At the present time there are five waterfowl research programmes being carried out in Western Australia. These are:

(1) The investigation and evaluation of wetland areas in the South-West of Western Australia.

(2) A study of the biology of the Mountain Duck *(Tadorna tadornoides)* on Rottnest Island.

(3) A general waterfowl banding programme. This programme operates at Moora, Katanning and on the lakes found within the Metropolitan area.

(4) The erection of artificial nest boxes.

(5) Aerial surveys for evaluating wetland areas and waterfowl populations.

It will only be possible to give a brief explanation of these projects in this article; however, an endeavour will be made to present each project in more detail in future editions of S.W.A.N.S.

In 1964, a research programme was initiated to investigate the disappearance of wetland areas on the Swan Coastal Plain. This area covers approximately 3,000 square miles extending from Yanchep to Busselton; bounded on the west by the coast and on the east by the Darling Escarpment. At one time this area had abundant wetlands, but today through drainage and land reclamation the number of wetlands has been drastically reduced.

Basically the research project showed that nearly 150,000 acres of wetlands had been drained for industrialization, urbanization and agricultural projects. This area contained some of the most permanent waters in Western Australia and was important both for waterfowl breeding and drought refuges. The drastic reduction of the wetlands in this area has undoubtedly caused a serious depletion of the waterfowl population in the South-West of Western Australia.

A second research project commenced in November 1964, to study the biology of the Mountain Duck on Rottnest Island. The Island was chosen for the study area because a large population of Mountain Duck breed each year on the salt lakes, and then migrate with their young back to the mainland. Figure 2 shows some of the salt lakes on Rottnest Island, which cover an area of approximately 400 acres.

In 1969, the first phase of the research project was completed and much information was obtained which can be applied not only to Mountain Ducks on the mainland but also to several other species of duck. Two interesting features of the study were the long distances that Mountain Ducks are able to migrate and the ability of the birds to desalinate water with the aid of a salt gland which is located on the head above the eye. During aerial surveys Mountain Ducks have been observed 300 miles east of Wiluna, and banded birds from Rottnest Island have been shot at Esperance. Although Mountain Ducks have the ability to desalinate water it is still necessary for them to drink at freshwater areas to clean their system of the salt. For this reason many stock dams which are located near saline lakes are regularly utilized by large concentrations of Mountain Ducks.

The waterfowl banding programme at Moora, Katanning and on the lakes of the Metropolitan

Fig. 1. Black Duck at Shenton Park captured by cannon netting (see also Fig. 6)

Area commenced in 1967 and to the present time 20,000 ducks have been banded. From the bands which are returned by shooters, by persons finding the birds dead or by recapturing during banding operations, it will be possible to establish migration patterns, the average life of the different species of ducks and the type of habitat the different species prefer. This type of information is of major importance when trying to establish game reserves and sanctuaries for all species of waterfowl. It must be remembered that if we are to continue to enjoy the number of birds we see today we must ensure that a large portion of these birds are given refuge, so that they are able to breed during each breeding period.

The duck bands, which are wrapped around the right leg of the bird, are made of titanium and do not cause any harm to the ducks. (See figure 3.) Some ducks have had two bands attached, and this is an experiment to try various types of metal to observe what material is not corroded by saline waters. In Figure 4, a male and female Mountain Duck have been tagged with "A-Frame" bill tags. These tags are held in position by a piece of monofilament string threaded through the nares of the duck's bill. These markers make individual identification possible, which allows information to be gathered on the requirements of nesting territories, the number of young that each pair of birds is able to raise to maturity, and the length

Fig. 2. Part of the salt lakes of Rottnest Island which cover approximately 400 acres of the Island

Fig. 3. A banded Black Duck *(Anas superciliosa)* showing duck band on right leg

of time that pairs of ducks will remain together. It has been found that Mountain Ducks which have successfully reared their young have pair bonds which endure over very long periods.

If birds are found dead or shot during the annual waterfowl hunting season it is important that bands and tags are sent immediately to the Department. It is also important to give your name, address, date and the location where the bird was shot or found dead. In turn the Department of Fisheries and Fauna will forward to you information on the banded bird, such as the species type, age, sex and the area where it was banded.

Fig. 4. Adult female (left) and adult male (right) wearing "A-Frame" bill tags

The use of artificial nest boxes for waterfowl has been used as a game management technique for many years by northern hemisphere countries. In Western Australia nearly all ducks nest in the hollow branches of trees, and in some areas these types of nesting sites are either non-existent or have been greatly reduced by the clearing of timber for agricultural purposes. Therefore, in the past three years, 1,940 boxes of the type shown in Figure 5, have been erected in the South-West Land Division area. Because of the poor breeding seasons in 1969, 1970 and 1971 the nest boxes have not been utilized as much as anticipated; however, all indications from the nest boxes erected during 1968 show that birds will readily use the artificial nest boxes. In 1972 an additional 1,000 nest boxes will be erected in the South-West Land Division.

Fig. 5. Technical Officer, Mr D. Munro examines eggs of a grey teal *(Anas gibberifrons)* nesting in artificial nest box

Over the past five years the use of aircraft in survey work has proved to be most efficient since it allows observers to see many areas which are usually inaccessable on the ground. Prior to the annual waterfowl hunting season, all areas containing water in the South-West and Eucla Land Divisions are surveyed and the numbers of waterfowl using the areas are estimated. This survey takes approximately four days and allows the Department to assess the waterfowl population of the shooting area almost immediately. Figure 7 shows the aircraft refueling at Esperance during this year's waterfowl survey. In 1969, it was obvious that severe drought conditions had caused the waterfowl not to breed and the adult birds were bunched together on the few remaining waters. It was therefore necessary to close the hunting season so that large concentrations of waterfowl could be left undisturbed during the drought period. This action has proved to be very

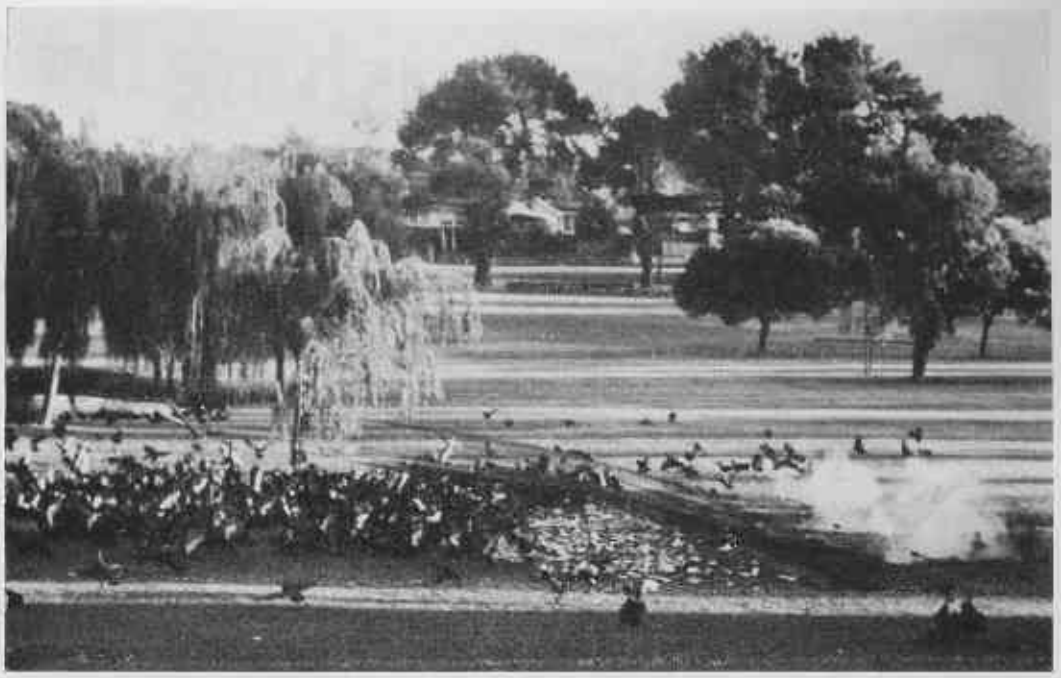

Fig. 6.
Capturing Black Duck *(Anas superciliosa)* at Shenton Park, Perth by cannon netting. Cannon net consists of a 4,000 sq. ft. net thrown by three mortars which are electrically fired

successful and the partial droughts of 1970 and 1971 have not had the drastic effect that would have resulted if shooting had been allowed in 1969.

The future of waterfowl in Western Australia is a very complex story. The sporadic nature of winter rains and cyclonic storms make the availability of surface water irregular and non-permanent. This in turn causes ducks to miss breeding periods or to rear broods in unfavourable conditions, which accounts for low production and high mortalities, especially when young birds are stranded in wetland areas that become dry.

The loss of permanent wetland areas along the coast has caused a drastic deterioration in the Black Duck population of the South-West. These wetlands act as drought refuges for waterfowl during the summer months when inland wetland areas dry out. Once the drought refuges are lost the birds cannot survive the long summer on the limited permanent waters of the inland areas. Drought refuges are the key to maintaining a waterfowl population in Western Australia.

Fig. 7. Survey aircraft being refueled at Esperance, during the annual wetland area and waterfowl survey of 1971

The deterioration of freshwater swamps, through the inflow of brackish or saline water, has destroyed much of the valuable breeding habitat for Black Duck and Grey Teal. This is becoming more apparent with the large numbers of ducks breeding on stock dams and rivers. To maintain a waterfowl population of all species of ducks, freshwater areas must be kept and the quality of the water must be maintained. Evidence that many wetland areas are becoming salty is the growing proportion of Mountain Ducks in the waterfowl population. These birds prefer the salt-water habitat which is increasing rapidly with the clearing of land and the draining of freshwater areas.

Although we pride ourselves on the abundance of natural resources in Western Australia we fail to realize that our rarest commodity is fresh water. Fresh water needs to be saved and stored, and an excellent example of water storage for wildlife is the artificially-made lakes of Beverley. Only if this type of action is taken can I see future generations of Western Australians enjoying the pleasures that waterfowl can stimulate, both aesthetically and through the sport of duck shooting.

PERTH WARDENS—NEW ADDRESS

Readers are asked to note that the Metropolitan District Fauna Office of the Department is no longer at Koonwarra House, 233 Adelaide Terrace, Perth. The Supervising Warden, Mr S. Bowler, and the Metropolitan Fauna Wardens are now located within the Head Office building at 108 Adelaide Terrace.