Flight

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DUCKS UNLIMITED QUARTERLY
WATERFOWL JOURNAL **$4.50**

In association with
Ducks Unlimited U.S.A, Canada and Mexico

DUCKS UNLIMITED (N.Z.) INC.,

— FOR WATERFOWL AND WETLANDS —

PO BOX 44-176 LOWER HUTT, NEW ZEALAND

IN THIS ISSUE

Cover Photo: Blue Duck hatchlings at Melvin Pike's Aviary. Photo: N Hayes.

MISSION STATEMENT

Ducks Unlimited (NZ) Incorporated is a private, charitable, non-profit conservation organisation dedicated to the preservation, restoration, creation and maintenance of wetland habitat in New Zealand, the propagation and conservation of the country's rare waterfowl, and the advocacy of wetlands as a valuable natural resource. This is achieved through six projects each with specific aims. These are: "Operation Pateke", the reduction of the threatened status of the New Zealand brown teal through the release of captive bred birds and wise habitat management; "Operation Gretel", to increase the number of grey teal in New Zealand through the provision of suitable nesting habitat; "Operation Whio", the conservation of blue duck through the release of captive bred birds to expand the species range; "Operation Branta", to establish the Canada goose in the North Island as a valuable recreational resource; "Operation Royal Swan", the conservation of Mute Swan through the establishment of a captive breeding population; and "Operation Wetlands", to preserve, create and manage wetland areas through direct funding, technical assistance and public education of wetland values. The scientific study of wetlands and waterfowl is also encouraged through direct funding.

The organisation was founded in May 1974 by a group of concerned conservationists and incorporated by them in June 1975 at Wellington, New Zealand. Membership, in four categories, is open to anyone who supports the organisation's objectives. Junior membership is $11.00 per annum. Full membership is $30 per annum, Trade membership is $45 per annum, Sponsor membership is a minimum of $60 per annum and Life membership is $600.00. Membership carries a subscription to "Flight", the official quarterly publication of Ducks Unlimited which currently reaches 2000 members and friends concerned with waterfowl conservation. Letter, manuscripts and photographs should be addressed to the "Flight" Editor. To assure prompt delivery, members should send subscription renewals and changes of address to National Headquarters at PO Box 44-176, Lower Hutt. Any views expressed by contributors in "Flight" are their own and do not necessarily constitute those of Ducks Unlimited (NZ) Incorporated.

Presidents Report

At the time of writing, our Executive Director, Grant Dumbell, is packing his bags for a quick trip to the UK. Thanks to British Airways Assisting Nature Conservation programme and the British Council in Wellington, we have been able to send Grant to the official launch of Wetland Link International. The aim of WLI is to promote the quality of wetland educational centres throughout the world to promote the establishment of more wetland educational centres. WLI will be administered at the HQ of the Wildfowl & Wetlands Trust, Slimbridge. Ducks Unlimited (NZ) was invited to attend the launch of WLI because of our involvement and efforts at the Sinclair Wetlands and the Pearce Wetlands two wetlands of international importance.

While at Slimbridge Grant will have discussions with staff at the International Wildfowl and Wetlands Research Bureau, whose headquarters is also at Slimbridge, about a wide range of wetland matters (DU is a Contributor member of the IWRB).

Rod Hall, who took two pairs of NZ Blue duck to the UK in 1987, and who runs British Airways Assisting Nature Conservation programme, generously arranged for Grant to fly to the UK, courtesy of the BA programme. The British Council also assisted with an extremely generous financial contribution to help Grant's internal UK travel costs. We are honoured and delighted to receive these two important sponsorships, and to receive the invitation from the UK to be present for the launch of Wetland Link International, and we thank everyone for the opportunity to be involved. Grant will provide FLIGHT with a full report on his trip in the June issue.

Two DU members recently received high recognition for their contribution to conservation. Horrie Sinclair and Les Cleveland of Dunedin, received 1990 Commemorative Medals. I'm sure all members join me in congratulating Horrie and Les.

In early December Stew Morrison, Executive Vice President, and Dr Duncan Sinclair, Chairman of the Board of Directors, of Ducks Unlimited Canada, paid a quick visit to Auckland and with a number of our Directors held a meeting at Tony & Liz Flexman's, near Pokeno, South Auckland. Stew and Duncan had just been to Adelaide where they assisted in the launching of Ducks Unlimited Australia. DU Australia had been in the pipeline for a number of years and it's great to see it up and running. Also at the meeting were Joe Hall and Clark Springer from DU USA. Joe and Clark, both prominent people in DU were holidaying in NZ under the guidance of DU (NZ). The meeting covered a number of important points on wetland conservation and DU administration. While at the Flexman's the group were privileged to have a conducted tour of the 500 hectare property and were able to view the numerous wetland creation efforts and the 120 grey teal nest boxes.

Feedback from members shows that Brendan Coe's article in the last FLIGHT was well read and appreciated. Brendan's efforts are a fine example of what can be achieved in wetland creation and restoration work. Over forty different bird species have now been recorded on Pateke Lagoons.

In the Wairarapa, DU member Howard Egan has just created around 3 hectares of prime wetland habitat and this is another fine example of what can be achieved. Howard purchased a 12 hectare property near Carterton in October last year and in the short time since then has created an area where, grey teal, shoveler, dabchick, grey duck, mallard, Canada geese, pied stilt, and paradise shelduck have already been recorded.

All in all there are some very positive things happening in the area of wetland creation and restoration. It would be nice to see DU providing greater financial support with this work, but this will not be possible until we have the Pearce Wetland mortgage paid off. We are, however, well able to provide a wealth of knowledge on all aspects of wetland creation, restoration and enhancement, as well as being able to assist with information about obtaining and keeping waterfowl in a captive, or semi captive, situation.

We have also managed to generate considerable interest in predator control and Howard Egan caught 8 feral cats in the first three weeks of his predator control programme. I saw one of the cats and it was the largest cat I've ever seen, and no doubt responsible for killing numbers of birds. Feral cats, ferrets, stoats and weasels have no place in the New Zealand environment.

Further excellent sponsorship was recently received from NATIONAL INSURANCE, who have again provided Ducks Unlimited with a greatly reduced premium for the $350,000 insurance policy at the Sinclair Wetlands. Sincere thanks to NATIONAL INSURANCE.

Neil Hayes
PRESIDENT ■

Feature Article

Campbell Island Teal Capture

BY RON GOUDSWAARD

The mission : to effect a landing on the volcanic plug of rock located in the seas of the subantarctic called Dent Island; to find and then catch four pairs of Campbell Island Teal assuming they were not already extinct; to keep the same alive and healthy until a ship could bring the party back to civilisation in six weeks time.

Dent Island is only 700m long but on the seaward side it rises almost vertically for 200m in a row of three peaks that are the backbone of the island and give the island its name. The strange proportions make the island look much smaller at a distance than it really is. From a long way off the fifteen metre high splash zone looks insignificant compared to the 200m high peaks. At close range a person is immediately dwarfed by the near vertical bare rock of the splash zone. There is no landing beach and our leader proposed that we use a small aluminium dinghy which he would guide in, on a rising swell, to a vertical piece of rock cliff and that we would just step off and hang onto by any way we could.

The teal are a small flightless version of the New Zealand Brown Teal although recent DNA studies suggest they are more closely related to Chestnut teal. The teal survive only on Dent Island and were probably exterminated from Campbell Island by the large number of rats that live there. There are no ponds on Dent Island and the teal live like rats under the chest high tussock and "mega herbs" that form a dense cover on the island.

The problem with the teal is that hardly anybody had ever seen them. The first was collected by a Captain Fairchild in 1886. It was not until people were stationed on the adjacent Campbell Island for a number of years during the second World War that another two were collected in 1944. Then apart from a possible sighting in poor light in 1958 the teal seemed to vanish and were thought extinct until a scientific survey of the islands in 1975 captured one specimen which was later returned to the island.

This bird proved that the teal were alive and warranted further attention. With the only known population concentrated on one 700m rock its long term survival did not look good. In January 1984 Murray Williams of Department of Conservation, along with Andy Garrick made a very intensive search for the teal and in ninety man hours of searching including overnight stays on the island, they had just four sightings and plenty of evidence that skuas were preying on the teal. Murray and Andy did manage to catch and bring back one male. This put pressure on the government to establish a population in captivity. In June the same year John Cheyne led a party of eight people to Dent Island where they had the best part of a day on the island and in repeated line abreast sweeps across the island recorded eight sightings and managed to catch three birds. This brought the captive population to three males and one female.

In September 1990 when I was invited to take part in the mission, nobody knew when they bred. The female in captivity had refused to accept any of the three males.

There is nothing quite like a challenge and there would be six of us. Anyway the opportunity to visit one of the subantarctic islands was too good to miss. I didn't know about the little boat, three metre swells and vertical cliffs at that stage but I would have gone anyway. More daunting was the report I started reading on Campbell Island weather. Campbell Island is the second to last stop before Antarctica. There are frequent gale force winds, constant bleak grey skies, fog, snow, rain, often in quick succession and sometimes simultaneously. One book gave met figures recording 32 hours of sunshine in 30 years. Campbell Island stands fully exposed to the westerly airflow around the antarctic ice cap.

Dent Island is on the exposed side of Campbell Island. The previous expedition members all reported the wind chill factor as horrendous. On the plus side was the wildlife. Campbell island is the main breeding ground for the majestic Royal Albatross. Campbell island also has breeding colonies of Black browed and Grey headed Mollymawks, Wandering and Light mantled Sooty Albatross, Giant Petrels, Hookers, Sealion, Elephant seals, Yellow-eyed and Rockhopper Penguins, numerous other petrel and shearwater species, and of course skuas. The time we spent with each of these would fill another article. Another plus was the promise of decent accommodation. A meterological crew is stationed all year round on Campbell Island and they have a very comfortable well equipped hostel.

We arrived at Campbell island on the 11th of October but sea conditions were too rough to even contemplate going to Dent Island until the 16th. We had plenty of other tasks to keep us occupied though. Unloading the year's supply of provisions took a whole day.

It took another two days to make transport boxes and build suitable aviaries for holding any teal we caught. We also had to eliminate the rest of the sheep originally introduced as a farming venture in the early 1900's. Their numbers had already been reduced drastically by two previous culling expeditions. Other tasks included removing a fence line that was erected in 1975 to keep sheep out of the northern half of the island, helping with track maintenance around the met base and securing the corrugated iron sheets from the coast watching station which was now in a dilapidated state. We also helped Roger Moffat monitor mollymawk and yellow-eyed Penguin breeding colonies. Roger is the engineer stationed at the base and puts a lot of his own time into

The rare teal of the subantarctic. Photo J.L. Kendrick.

monitoring the seabirds for various Department of Conservation scientists.

We managed two days on Dent before the weather deteriorated again. We found nothing on our initial survey except one possible faecal sample. We had more success when we began a slow search using a tape recording made of the Campbell Island Teal at the National Wildlife Centre, Mt Bruce. Typically the first indication of a teal is a rustle in the tussock. If you have been quiet and stop to sit quietly the teal sometimes comes back to look at you. The hard part is to spot it watching you in the sea of tussock. The males sometimes advertised their presence with a whistle and sat where you could see them. The females never exposed themselves fully. Our most successful technique was to spread ourselves out around the taperecorder in a suitable looking gully. We soon learned that a gully with a permanent trickle of water and a good cover of mega herbs such as Stilbocarpa and Bulbinella was most likely to have teal resident nearby. By spreading out we increased the odds that one or other of us would see or hear the teal moving in toward the recorder. A few teal answered the tape, more often they sneaked in with hardly a rustle. If someone spotted a teal he alerted the rest and guided them into position around the teal. We then closed in and more often than not the teal simply vanished. Sometimes there were petrel burrows present indicating how the teal might have vanished. At other times it was frustratingly inexplicable how they vanished so completely. On the second to last day when we were searching selectively for females we "watched" a particularly amorous male show us how it was done. He called repeatedly in reply to the tape allowing us to follow his movements. On several occasions he moved past within half a metre of where one or other of us were standing without anybody getting even a glimpse of him as he did it. This bird also covered a surprising amount of ground in a short space of time. One minute he would be beside the speaker and then next he would be thirty meters away, whistling in reply to the tape all the way so we knew it was the same bird.

On the first two days we caught two males and one female. Then apart from a brief visit on the first of November which we had to abort because of bad weather (we had hardly got ashore when it started snowing), we didn't get back to Dent until the 5th of November. On the fifth we managed to catch another pair, the female of which appeared to be the mate of one of the males caught in the same locality previously. We also used this opportunity to set up two Fyke nets and another six self closing traps. These were left unset whenever we left the island because of the uncertainly of when we could get back. As it happened the weather deteriorated and we were unable to use the boat again. Fortunately the Frigate that was to take us back to New Zealand carried a helicopter on board and on each of our last three days the pilot managed to land three of us on top of the southern peak. There was nowhere to land and the pilot simply hovered with the two front wheels tucked into the slope. Getting back off the lower slope with all the gear was exciting. The pilot hovered into the wind beside the slope, his rotor blades clipping at the tussock, and we clambered up the legs one at a time.

On the 15th November, the first of our last three days, we caught three teal. The first two were males. At the end of the day we had just released one and were preparing to release the second male when I found a teal in one of the traps. In the rush of preparing for the helicopter which

was due to arrive shortly I mistook the teal for a female. It was not until the following afternoon, while a TV crew which arrived with the Frigate were filming the teal in bright conditions, that I realised the bird was a male. Now we had an unacceptable surplus of males and two would have to go back. the pilot, as amicable as ever, agreed to take us back the following day, our last chance to catch a female.

The following morning we waited for the cloud to lift. We had already spent most of the 16th searching for females. The only one we did see had given us the slip. Eventually the cloud lifted enough for the pilot to take us through the saddle to Dent Island. We held onto both birds while we searched the island for another female, again without success although two females called briefly in reply to the tape and then vanished into "thin air". Finally, when we could delay it no longer we released the two males. the first male promptly slipped off quietly into the tussock. The second male headed up his watercourse calling. Moments later we heard a female reply. Alerted we started following. She continued to reply and when we caught up to him they were actually mating in the watercourse. You can just imagine the effort we put into trying to catch those two teal. The three of us began diving desperately after them in all directions. The satisfaction of recatching one quite quickly was swamped by the frustration we felt when we realised it was the female that was getting away. We caught her though and that must have been the most satisfying moment of the whole trip. Not only had we caught seven out of our target of eight birds, (more individual birds than had ever been seen before), four of the birds were probably established mated pairs.

In total over six days we had some thirty eight encounters with teal and we caught ten of them. Many of the encounters were on the same sites and probably involved the same birds. There were also several encounters of different birds (males vary considerably in the brightness of their head and chest colour) at the same site indicating their territories are more flexible than we had expected. The teal were concentrated around permanent watercourses on the lower slopes but we found teal everywhere, even close to the top, giving us the impression that every suitable habitat was occupied and we estimated a population of sixty birds for the island.

The northern and western slopes were too dangerous for us to survey but from the helicopter we could see there were pockets of suitable looking habitat and we could see no reason why teal should not survive in these pockets too. Skuas were nesting all round the island but we found no evidence of teal predation. The skuas appeared to be feeding predominantly on Sooty shearwaters which were just commencing their breeding season.

The teal were a delight to look after. They commenced feeding on the poultry laying pellets immediately it was offered to them. They were naturally tame and several times I allowed one or other of the males the freedom of the room while I serviced the holding pens. Instead of trying to escape they would wander around the room visiting and whistling to the other inmates or poke around in corners looking for food. They all appeared to be light in weight when caught at the end of their winter and began putting on weight quickly even though I restricted their food.

The trip back to New Zealand was much more enjoyable, thanks to the relatively calm sunny weather. The birds arrived safely at their destination and quickly paired up. The first female caught paired up with the first male caught. These two had been living side by side in adjacent pens on Campbell Island for six weeks already. November is rather late in the season to start breeding but it would appear spring is late arriving on Dent Island anyway so here's hoping they do breed in their first season in captivity.

Expedition Members

Andy Cox
Department of Conservation
Field operation leader
Boatman

Support Team

Shane Hancox
Department of Conservation

Geoff Copson
Australian National Parks Wildlife

- helped in initial survey and setting of nets and traps

Teal catching team

Pete McClelland
Department of Conservation

Murray Williams
National Wildlife Centre

Ron Roudswaard
Wellington Zoological Gardens

Feature Article

Seasonal Breeding in New Zealand Birds

JOHN F COCKREM

Introduction

Most New Zealand birds have a clear breeding season, usually in spring and early summer, and egg-laying generally occurs over three months from September-November. For New Zealand waterfowl the period over which eggs are laid ranges from 2-3 months (e.g. paradise duck) up to 8 months (black swan). The regularity of the breeding season each year implies that birds are able to control the time of their breeding. Furthermore, behavioural and physiological changes occur in advance of nesting, so birds must be able to anticipate the appropriate time for egg-laying. At Massey University I have recently started to study how birds time their breeding. In particular, I am studying the physiology of reproduction in order to understand how birds respond to external cues such as changes in daylength, and how environmental information is translated into hormonal changes that lead to seasonal breeding. The work is providing new information on the biology of our native birds, and also has application to the captive breeding of endangered birds.

The Timing of Breeding

Seasonal breeding is controlled by two types of environmental information, defined as "ultimate" and "proximate" factors. Ultimate factors are those that dictate the timing of the production of young, and the most important is the availability of food for feeding young and for post-fledging survival. Proximate factors are those that regulate development of the gonads (testes and ovary) and the sequential events of the breeding cycle. The most important proximate factor for many birds is the annual cycle of daylength, which provides a stable reference point for the switching on and off of reproductive rhythms. Birds like the mallard that respond to changes in daylength are considered to be photoperiodic. For most photoperiodic birds the increasing daylength after the winter solstice stimulates gonal growth in anticiation of the breeding season. Proximate factors bring birds into a physiological state in which breeding can begin, but are not of themselves sufficient to induce nesting and egg-laying. The final stages of gonad development and the onset of nesting are stimulated by supplementary information, such as interactions with the mate, and nutrition. An adequate food supply is essential if birds are to breed, but just when food is required, what components of the diet are crucial, and what the physiological mechanisms are by which nutrition influences reproduction are poorly understood.

Hormone measurements

For male birds, reproduction requires the production of fertile sperm, whilst for the female, eggs must be ovulated, fertilised and laid. The production of sperm and eggs by the gonads is the result of a pathway of hormone secretion that starts in the hypothalamus, an area at the base of the brain that contains the "biological clock". The hypothalamus controls the reproductive system via the pituitary gland, which in turn secretes hormones which act on the gonads to cause production of sperm and eggs and steroid hormone secretion.

Hormones are chemical messengers that enter the blood and carry information around the body between different organs. Hormone levels in blood depend on the activity of the internal reproductive organs. Thus, by measuring hormone levels in a bird's breeding cycle. Hormone measurements are now a major tool in the study of the physiology of seasonal breeding.

Reproductive physiology of New Zealand birds

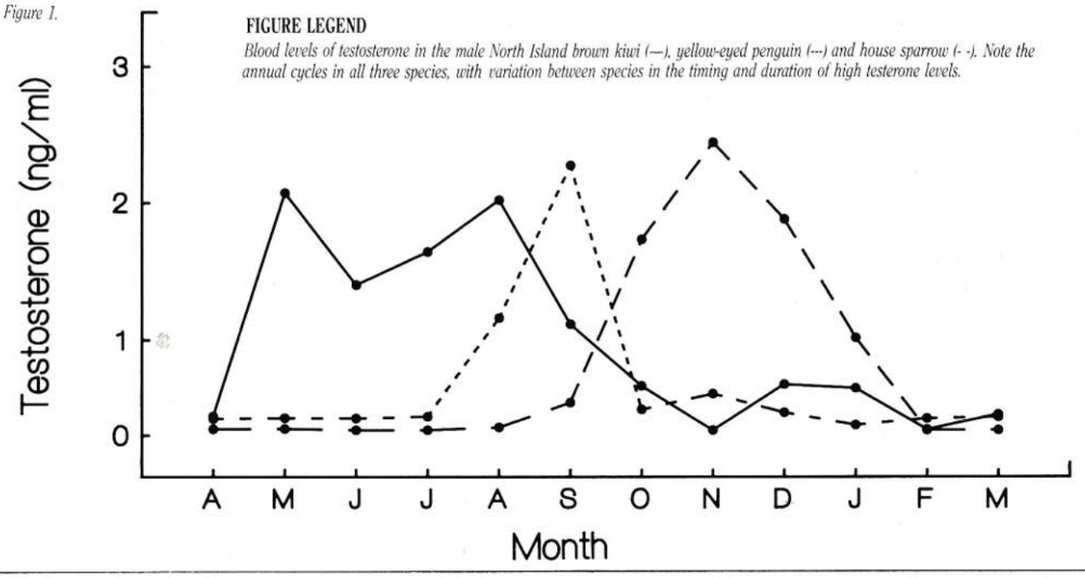
Virtually nothing is known about the physiology of breeding cycles of New Zealand birds. Yet some of our endemic

This article outlines important and necessary research being undertaken on New Zealand bird species. Photo N. Hayes.

Figure 1.

FIGURE LEGEND

Blood levels of testosterone in the male North Island brown kiwi (—), yellow-eyed penguin (---) and house sparrow (- -). Note the annual cycles in all three species, with variation between species in the timing and duration of high testerone levels.



species have very unusual cycles, such as the kakapo which does not breed every year and the kiwi which lays very large eggs. Recently, I have had the opportunity to measure hormone levels in three different birds - the North Island brown kiwi, yellow-eyed penguin and house sparrow. In all of them I measured levels of the main male and female hormones (testosterone and estradiol) in blood over one year, and results for testosterone are shown in Figure 1.

North Island brown kiwi

The timing of seasonal breeding in free-living North Island brown kiwi is unusual in that egg laying starts in early winter and peaks in early spring. Incubation of the large eggs is also unusual, being prolonged (70-90 days) and performed only by the male. Murray Potter and myself found that male kiwi had an annual cycle of blood levels of testosterone. Levels were low from February-April, rose in May to a broad peak lasting 4 months, and then declined in September to lower levels from November-January. Testosterone levels in relation to stages of the breeding cycle were low in the non-breeding period, rising to high levels for two-four months before egg laying. Levels declined steadily towards the start of incubation and were very low by the time of brooding of the chicks. There was an annual cycle of estradiol levels in females that was similar in timing and extent to the male cycle. Estradiol levels in relation to stages of the breeding cycle in females were low in the non- breeding period, increased over 3 months before egg laying, declined in the 2 weeks before laying and were low thereafter. These results show that the North Island brown kiwi has annual cycles of blood steriod levels that correspond rather precisely to the pattern of winter breeding.

Yellow-eyed penguin

Phillip Seddon and I found that testosterone levels in males were low in the non-breeding period, with a rise in August and a peak in September during the period of nest building and copulation. Testosterone levels then dropped rapidly, were low again by the time of incubation in October and remained low until the following breeding season. Estradiol levels in females showed a similar pattern to testosterone in males, with a rise in August from low non-breeding levels, and a peak in September before egg laying. Levels declined rapidly after egg laying, and were low again in October.

The yellow-eyed penguin has a short period of egg laying in the spring, with no second clutches laid. The hormone data suggest that the penguin also has a short period of ovary and testis activity, perhaps only about two months each year. The reproductive cycle of the yellow-eyed penguin is probably photoperiodically controlled, with gonad activity stimulated by the increasing daylengths of spring. The birds cease reproductive activity whilst the daylength is still increasing, and must therefore have lost the capability to respond to a stimulatory daylength. This phenomenon is known as photorefractoriness, and has been found in most seasonally breeding birds that have been studied experimentally.

House Sparrow

I studied the house sparrow at Lower Hutt with Don Waddington, finding marked changes during the year in the size of the gonads. From March to June the testes are small, weighing less than 0.04% of body weight. Testis size starts to increase in July, with a rise from August to a peak in December. This is followed by a decline to the regressed size by March. The maximum weight of the testes during the breeding season can reach 2.8% of body weight. For comparison, if a 70kg human male had testes of equivalent size, they would weigh 2 kg! The female reproductive system has a similar pattern of growth and regression to that of the male, with a 100-fold change in ovarian weight between the non-breeding and breeding seasons. Hormone measurements showed that testosterone levels in male sparrow were low from April-August, rising in September to a peak from October-December. This was followed by a steady decline to low levels again in February. Estradiol levels in female sparrows also showed an annual cycle, being low from April-July, rising in August to a peak from September-January and then declining. The pattern of hormone levels in house sparrows thus reflects the size and state of the reproductive system in both males and females.

Research at Massey University

The field studies of the North Island brown kiwi, yellow-eyed penguin and house sparrow have shown that New Zealand birds do have annual cycles of blood hormone levels that are correlated with the events of the breeding cycle. Data on the size of the internal organs are available only for the house sparrow; for this species they show that the hormonal cycle reflects a dramatic cycle in the size of the ovaries and testes. In all three species the reproductive system is clearly being switched on and off each year. The most likely proximate factor stimulating the growth of the reproductive system is the annual cycle of daylength ie, all three species are probably photoperiodic.

In order to understand how other New Zealand birds time their breeding, expecially native species, studies are now needed where the daylength and other conditions are varied systematically. this is what I am now doing at Massey University. The key research question can be expressed simply as "what turns bird on and off?" In order to answer this question I am studying how daylength, nutrition and other external stimuli interact with internal rhythms to produce annual cycles of reproduction. We want to know how external information, such as the length of the day, is "read" by a bird,

and how this information is transformed by the brain into hormonal signals that control the growth of the reproductive system and the development of sexual behaviour.

To do this I plan to use the grey duck as my study species. Grey ducks were chosen because they are a native species that can be held and bred in captivity. We can use information from the closely related mallard to help plan our work, and can use mallards to sort out methods to use with grey ducks. If I can develop a detailed understanding of reproduction in the grey duck I can then apply the knowledge to other species that cannot easily be studied. Ducks Unlimited is supporting this work by providing young birds reared in captivity. I will also need to catch free-living ducks so we have sufficient birds for the research programme, which will involve myself and two PhD students. We will collect regular blood samples from ducks held outdoors and under controlled lighting patterns indoors. Gonad size will also be measured by laparoscopy.

My work also includes the kiwi and kakapo. Brown kiwis that are found dead are being sent to us for the measurement of the size of the reproductive system. This will enable us to gradually build up a picture of gonad size in the brown kiwi in different months of the year for comparison with the homone data from Northland. Other aspects of the reproductive biology of the kiwi are also being studied.

I am a member of the Kakapo Recovery Team and am using our knowledge of reproduction in birds to help the management of the kakapo. We need to know whether kakapo, in particular females, are undergoing cycles of gonad growth each year or whether they are not physiologically capable of breeding in some years. It is not feasible to regularly collect blood samples to measure hormone levels, so we are investigating the measurement of hormone levels in droppings. Hormone levels in droppings may give us an indication, albeit less precise than blood measurements, of gonadal activity in kakapo without having to handle the birds.

Applications to conservation

A key question for the managers of both free-living and captive birds is "what factors will stimulate breeding?". This is similar to our basic research question of "How is the timing of seasonal breeding in birds controlled?". An understanding of the physiology of breeding can be applied to the conservation of birds, in particular to captive breeding. One example of this is the induction of ovulation in birds. In captivity some birds show signs of sexual activity during the breeding season but do not breed. A current matter of concern is the only female Campbell Island teal in captivity. She has been in New Zealand now for six seasons yet will not accept a male, despite the best efforts of John Gill Tarawera and the staff at Mt Bruce. An understanding of the physiology of ovulation may lead to being able to artificially induce ovulation in birds. Measurements of hormone levels in blood samples collected during the breeding season can be used to identify birds that are physiologically capable of breeding. If daylength is an important factor stimulating gonad growth in a species then it may be possible to stimulate breeding by using artificial light/dark cycles, as has been attempted for birds outdoors at the Slimbridge Wildfowl Trust in England. These examples indicate how the understanding gained from basic studies will in future be able to assist in the management of breeding in birds.

Acknowledgements

Murray Williams improved a draft of this article, and Ducks Unlimited members are helping to provide grey ducks for our studies.

Grey ducks - request for help from Ducks Unlimited members Head Grey ducks were once the most common duck in New Zealand. Today, however, grey duck are absent from some areas and in low numbers in most others. Many grey duck are in fact hybrids with mallards. The national population of grey ducks is probably still declining, but there are few if any published reports to confirm this.

Andre Terpstra from Galatea has flocks of more than 100 grey ducks in his area. Are there any other places in New Zealand with similar or better populations of grey ducks? In our studies in the Rangitikei and northern Wairarapa areas we have yet to find pure grey ducks. If you have flocks of pure grey ducks in your area then we would appreciate hearing from you. Information from Ducks Unlimited members will allow us to map the current distribution of grey ducks in New Zealand. This will help our work, and may also show up a need to revise the current management of grey ducks.

The best source of grey ducks for our studies of captive ducks are birds that have been reared in captivity. Ducks Unlimited breeders have helped us this season to start our research on grey duck. Are there any other breeders who might be able to help us with grey ducks from the 1991 season? If so we would be very pleased to hear from you. Your help will be acknowledged in reports from our work, and we will keep you informed about the progress of our studies.

Dr John Cockrem, Department of Physiology and Anatomy, Massey University, Palmerston North. Ph (063) 69-099

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Celebrities Cooking Corner

By Audrey Pritt

Pineapple Tart

1/4 lb (115g) butter
2oz (55g) icing sugar
1 egg 6oz (180g) flour
1 small teaspoon baking powder

Mix together and press into 2 sandwich tins. Cook 375F Filling Put 1 medium tin crushed pineapple into a saucepan and heat with 1/4 cup sugar. Thicken with 1 tablespoon custard powder mixed with a little cold water. Spread over tarts. Can be eaten warm or cold.

Scalloped Potatoes

250g oinions
600g potatoes cut into thin slices
300 mls cream
200 mls milk
2 tablespoons seed mustard

1 tablespoon butter
1 teaspoon salt
1 teaspoon pepper

1. thinly slice onion, saute in the butter until soft
2. layer the cooked onions and potato in a shallow baking dish, finishing with a layer of potatoes. Combine remaining ingredients and pour over the top.
3. Cook in reheated oven at 180deg C (350 deg F) for 1.30 hours, or until potatoes are tender.

Plum Port

Jelly 1.5 kg plums
3 cups water
about 3 cups sugar
2 tablespoon lemon juice
1½ tablespoons port

wash and roughly chop plums. Place the flesh and stones in a large presurising pan. Cover with measured water. Simmer slowly until tender, about 30 mins. Turn into a jelly bag. Allow to dry overnight or for several hours. Measure juice in cups and return to the presurising pan. allow 1 cup sugar for each cup of juice. Add sugar to the juice and slowly heat, stirring until sugar dissolves. Add lemon juice. Increase the heat then boil briskly till jelly gives a setting test. Remove from heat and add the port. Pack and seal into clean, hot, dry jars.

D.U. News

N.Z. SPORTMANS SHOW

This year D.U. was invited to have a display at the first N.Z.Sportmans Show which was held in Rotorua from January 18-20. The show included a variety of stands such as sports shops dealing in outdoor equipment, outdoor sporting organisations and a number of conservation groups. Approximately 10,000 people attended over the 3 days. Grant Dumbell and Marie McEntee manned the stand, along with the added help from DU Bay of Plenty Director Dave Johnstone.

The majority of people who attended were keen to find out about DU,its aims and objectives and a handful took out memberships at the show. Some people were unaware of how rare and unique some of N.Z.'s waterfowl are, and they showed genuine interest in learning a little about them. Others were keen for information about wetland development as they had a small pond on their property and they were keen to attract waterfowl. Our "Bucks for the Ducks" raffle which ran very successfully was won by Mr Willie Shaw of Okere Falls.

It is hoped that the show will become an annual event, with the venue rotating around the country. Certainly the success of the show this year, will mean that other centres have plenty to look forward to in future years. We would like to especially thank the organisers of the show who donated the cost of the stand to D.U.

D.U. ANNUAL GENERAL MEETING

As you will have seen in the advert earlier in this Flight, the 1991 D.U. Annual General Meeting/Dinner/Auction is to be held on July 13-14 at the Tokaanu Hotel, (formerly the T.H.C. Tokaanu). If you are interested in attending, please fill out the registration form and send it along with your pre-registration fee and accomodation deposit (if required) to Diane Pritt as soon as possible. As always the A.G.M. is a sort after event on the D.U. Calender and strongly supported by many members. A memorable and enjoyable time is guaranteed. Workshops will again be held on the Saturday morning at 10.00 and 11.00am. The type of workshops to be held this year will be notified in the June issue of Flight. Mr Don Merton Q.S.M. will be guest speaker at the A.G.M. Don's passion for conservation is widely respected, so we are sure his talk will be of considerable interest to many members.

NEW LIFE/ SPONSOR/ TRADE MEMBERS

Since our December issue of flight, we have received a number of new life/ sponsor/trade members. We would like to thank the following for their support of DU:-
Life Members: J. Nielsen, Mt Bruce, Masterton. Mr M. Paku, Masterton. Mr and Mrs C. Springer, Alaska U.S.A. Mr and Mrs J.Hall, Washington, U.S.A. Mr H. Honneggar, Otaki.
Bronze Sponsors: Mr and Mrs Read, Ontario, Canada. Mr David Rice, Auckland. West Auckland Forest and Bird Protection Society, Auckland.
Trade Members: Otukou Outdoor Guides, Turangi. Alltech Associates Inc, Auckland. Mr C.J. Bowen, Lower Hutt.

Grant Dumbell Marries

D.U.'s Executive Director, Dr Grant Dumbell is shown with his bride Marie McEntee who is also D.U.'s secretary. The marriage took place at Auckland in February and the happy couple intend to reside in that city where they will continue to be at the forefront of D.U. NZ's waterfowl and wetland activities.

Combine a choice piece of the Wairarapa, an able contractor, a water source and Howard Egan and the result is instant wetland. Howard reports 50 odd mallard in as well as regular visits from Canada geese - and cats of which there are now 8 less in the district.

D.U. AUCKLAND DINNER/AUCTION

The Auckland chapter is holding its annual dinner/auction on Friday March 22nd starting at 7.30pm. The venue will once again be The Sorrento, One Tree Hill. The ticket price is $35.00 which includes a full smorgasbord dinner. All D.U. members and friends are invited. For those wishing to attend the evening, tickets can be obtained from the chaper chairperson - David Rice at P.O.Box 266,Papakura, Auckland, or by Phoning David at 299-8330 (bus). If anyone has any items suitable for the silent or main auction, these would be gratefully accepted. Collection can be arranged by ringing David at the above number. We look forward to seeing you there.

Wellington Chapter Dinner/Auction

This year's event will be held at the James Cook on March 23 with tickets costing $35.00 each. They are available from Chris Hooson, Telephone 04 859-166. The evening is a must for all wetland and waterfowl enthusiasts.

Masterton Intermediate

On Friday the 30th of November 1990 the latest stage of Masterton Intermediate School's waterfowl enclosure extension was completed and offically opened by Mr Jim Campbell (Ducks Unlimited) and Mr Bob Francis (Mayor of Masterton). The official opening was attended by Mr Francis, (Mayor of Masterton), Mrs Brewster (Chairperson of the M.I.S. Board of Trustees), Mr Lindsay (Principal), members of the staff and students.

The project was started in the early 1980's with the building of the dam under the supervision of Mr L Campbell.

In 1986 the project took a further step with the building of the waterfowl enclosure and cages. This was made possible through a grant from Alex Harvey Industries, assistance from D.U. and D.O.C. with construction work being done by Periodic Detention workers. Planting and setting up the cages was done by pupils of M.I.S.

This year the complex has been extended by fully enclosing the pond area below the waterwheel to allow some of the waterfowl much more access to the pond, and to enable the School to broaden the range of breeds raised in it's waterfowl programme.

As much of the works as was possible was done by pupils of M.I.S. under the supervision of Mr C Anderson and Mr G Banks (M.I.S.staff). Other work was completed with assistance by members of D.U.

NATASHA VAN BERLO,
RICHARD FALKNER

DUTCH TO LET LAND REVERT TO BOG

After centuries of fighting back encroaching water with sea walls and dykes, the Dutch are to let large areas of their flat farmland revert to bog in an effort to re-establish wild bird and animal life.

Agriculture Minister Gerit Braks said the Government wanted to develop about 50,000 ha of farmland into nature reserves over the next 30 years, increasing the national reserve area by a third. Farmers are to be paid market rates for environmentally important land and particular emphasis is to be placed on wetlands, important for migrating birds.

The Government has bought up wild areas and turned them into reserves in the past but this is the first time it has sponsored turning farmland back to its natural state, officals said.

Over the last 40 years intensive farming with wholesale drainage and heavy chemical use has taken its toll on the Netherlands' wildlife. Five per cent of the country's plant species have disappeared and the poplulation of breeding birds has fallen by a third. The deterioration of plant and animal species in our country is still continuing, Mr Braks said.

The Cabinet has approved a budget of $US260 ($NZ442 million) for the nature plan between 1990 and 1994. A further $US120 million was proposed a year ago. Under the plan, part of a wide-ranging drive by the Dutch Government to improve the environment, existing nature reserves are also to be extended and farmers offered subsidies to maintain meadows.

Officials said it would not have a significant impact on the country's arable land or livestock production. ■

DUCKS UNLIMITED ANNUAL CONFERENCE PROGRAMME

9.30 – Registration Desk opens
10.00 – Workshop
11.00 – Workshop
12.30 – Buffet lunch (not included in registration price)
2.00 – Annual General Meeting opens
Welcome from the chair
Apologies
Confirmation of 1990 A.G.M. minutes
2.05 – President's Annual Report
2.10 – Financial Report for 1990/91
Appointment of Auditors for 1991/92
2.15 – Election of four Directors from the floor Ratification of any other matters
2.20 – Executive Director's Annual Report
2.30 – Report on "Operation Wetlands"
2.35 – Sinclair Wetlands' Manager's Report
2.45 – Report on "Operation Pateke"
Presentation of the Brown Teal Breeder of the Year Award
2.55 – Report on "Operation Whio"
Presentation of the Blue Duck Breeder of the Year Award
3.05 – Report on "Operation Royal Swan"
Presentation of the Mute Swan Breeder of the Year Award
3.15 – Report on "Operation Gretel"
3.20 – Report on "Operation Branta"
3.25 – Editorial Report
3.30 – PRESIDENT'S SHOUT
3.45 – Presentation of the Ducks Unlimited (N.Z.) Inc Artist of the Year Award
3.50 – Guest Address
4.05 – Guest Speaker – Mr Don Merton QSM
4.45 – Presentation of the Bill Barrett Trophy
4.50 – General Business
5.00 – Annual General Meeting Closes
7.00 – Annual Conference Dinner
8.45 – Annual Conference Fundraising Auction
10.00 – Refreshments

1991 ANNUAL CONFERENCE

The Tokaanu Hotel
(formerly T.H.C. Tokaanu)
Saturday 13th and Sunday 14th July 1991.

I/We will be attending the 1991 Annual Conference

Name/s: _____

Address: _____

_____

My/Our pre-registration fee of $50.00 is enclosed

I/We will require accomodation for the nights of

_____

Number in party _____

Number in room required _____

My/Our deposit for accomodation of $80 per room is enclosed.

Please charge my Visa/Bankcard/AmEx/Diners

Numer: _____

Expiry date: _____

Signature: _____

Please return this form, with your $50 pre-registration fee and $80 accomodation deposit (if required) to:
Diane Pritt, c/- P.O. Box 44-176, Lower Hutt
Phone (0658) 58-016

Project Reports

OPERATION PATEKE

Jim Campbell took 42 brown teal north with him on his holiday trip in mid-January and released them at the Pureroa Peninsula site. Prior to their release farm manager, Dallas Greenway, had reported that brown teal broods had been recorded on the 7 hectare lake and also confirmed earlier reports of brown teal being seen throughout the district. We have now released brown teal at the Pureroa site.

In July we hope to release radio transmitter carrying brown teal at the Mimiwhangata Farm Park and follow-up their movements during the following months.

The captive breeding season is going well and the Otorohanga Zoological Society has reported 22 birds reared and the Katikati Bird Gardens 16 birds reared. The final figure for the season should be well over 100.

The success of our programme has again been mentioned overseas - this time in a new book by Dr Janet Kear of the Wildfowl & Wetlands Trust. The book entitled "MAN & WILDFOWL" provides a good overview of Ducks Unlimited's OPERATION PATEKE and the recovery programme.

OPERATION WHIO

The captive breeding season for blue ducks looks likely to produce twice as many birds as the last season and while we are not able to put a figure on it at this point in time we are hopeful that at least four pairs will be available for the programme. To date Melvin Pike at Carterton and Dave Johnson at Reporoa have reared four blue duck between them and the National Wildlife Centre has birds being reared. The project was given a major boost recently when the Turangi section of the Department of Conservation caught two wild blue duck females for the captive breeding programme. One female came from the headwaters of the Wanganui River and the other from the Whakapapa River. Both females settled into captivity extremely well and were feeding on artificial food within a day of being placed in captivity. Attempts will be made to flock-mate these females, who now have two males keeping them company.

OPERATION ROYAL SWAN

The Mute swan recovery programme received a great boost in the North Island with the Hartree family of Hawkes Bay rearing 10 cygnets. Breeding elsewhere in the North Island has been extremely good and in the South Island good numbers are reported at Peacock Springs and at the Sinclair Wetlands Horrie reports that the pair of Mute's in the captive waterfowl enclosure have reared one cygnet.

We still have a massive list of members wishing to join the recovery programme, but we should be able to whittle this list down from the successes this season.

OPERATION BRANTA

Our first two banding operations under our new operation policy were conducted at Jim Campbell's Wairarapa and Di Pritt's Ohakune properties during January. Both of these capture operations were very successful yet each was quite different in the methods used. All our capture operations are conducted during the moult when the geese are in their flightless state regrowing their primary flight feathers. At Jim's property the geese are found in small concentrations scattered around the farm, often on or near farm ponds and Jim's waterfowl ponds. Each group consists of 10 - 50+ birds and must be located and tracked down. Usually the birds are cornered against a fenceline that surrounds a pond or paddock. Over 30 birds were captured including 5 that were previously banded.

At Di Pritt's property however things are different, the majority of the birds are located on one pond during the moult, this year around 150 - 200 geese were on the pond. Ducks Unlimited members were very fortunate to be able to combine with the Taranaki Fish & Game Council and local DOC staff to conduct a drive into a pen. This operation is quite labour intensive during the setting up and taking down but resulted in over 80 Canada Geese being banded in one afternoon.

The Board hopes in the future to be able to offer junior members the opportunity to assist in these operations, details of a competition we will run to select these juniors will be published in a later issue of 'Flight'.

The following is an update of the aims and objectives of Ducks Unlimited's OPERATION BRANTA for the Canada Goose, approved by the Board on 28 October 1990, prepared because most of the objectives set in 1977 have been achieved. These objectives specifically relate to the North Island. The Canada Goose is frequently placed on the Game Licence in many areas in the North Island and there are now self sustaining populations located in many areas throughout the North Island.

OBJECTIVES

1. To educate the public, both hunting and non hunting, to a greater appreciation of Canada Geese and an understanding of their management.
2. To institute, if authorised, a banding program to some of the populations, to provide raw data and allow monitoring of each of the banded populations.
3. To liase with interested parties including Ducks Unlimited, Fish and Game Councils, Federated Farmers and the Department of Conservation.
4. To encourage Canada Geese on private land by making birds available to land owners with suitable habitat. Any bird transfers will be done from existing North Island populations. There is no intention to conduct any further transfers from the South Island at this time.

OPERATING GUIDELINES

1. Transfers of birds to new areas shall be arranged by Ducks Unlimited Directors convening the operation or by the Executive Director in liason with the Directors, subject to the following criteria being met:
   (a) The landowner shall hold or obtain the appropriate authority from the Department of Conservation.
   (b) The landowner shall ensure there is sufficient habitat to support the growing population.
   (c) The landowner must participate in any banding program carried out by Ducks Unlimited on request.
   (d) The landowner must be prepared to make birds available in the future to assist with the operation if requested.

■

Canadas in the Wairarapa. Photo H. Egan.