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An Increasing Species, The Scaup. Photo Glenys Hansen


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When Horrie Sinclair gifted Ducks Unlimited the 310 hectare Sinclair Wetlands, and the gifting was recorded by COUNTRY CALENDAR cameras at the 1985 Annual Meeting, few people believed that we could possibly achieve our stated aim - which was to create a major environmental attraction at the wetlands, along the lines of what the Wildfowl Trust had achieved at their centres in the UK. When serious fund raising started in 1985 people generally felt that we would not raise more than a few thousand dollars and would end up with modest facilities at the wetland. Of course, no one really knew how things would go, but I, and most of the DU Board of Directors, were confident that we could do something major at the wetlands, but no one in their wildest dreams believed we would come close to raising nearly \$300,000 in less than three years, and erect such a magnificent 4,500 square foot educational centre - and have it opened by the Governor-General. And to make such rapid progress in creating Wildfowl Trust-like facilities; with walkways, captive waterfowl collection, viewing hides, etc.

Having visited seven of the Wildfowl and Wetland Trust's facilities in the UK, I can assure members that DU is making real progress at the Sinclair Wetlands and very few matters have to be finalised in order for us to reach stage 1 of the overall plan, which is to create a major environmental attraction and to educate the public about waterfowl and wetlands. Some of the short-term things that still have to be completed are - the erection of a hide on Lonely Island, the displays in the viewing lounge, self-serve tea making facilities and the display of captive waterfowl. In respect of the waterfowl display, the Otorohanga Zoo have generously donated nine grey teal; Bill Clinton-Baker has generously donated three shoveler and four Carolina wood ducks, Jim Campbell a pair of Canada's and I've managed four grey ducks. So good progress is being made towards assembling an impressive display of waterfowl. However, if any members have any of the following species they would like to contribute to the collection please let me know: NZ Scaup, NZ Paradise Shelduck, Mandarin, Chestnut Teal, Australian Mountain Duck. Once a good collection has been assembled and the viewing hide completed we should be in a position to be able to charge visitors an entrance fee.

It's vital that we crank up the scene in Dunedin as fast as possible, as the Wetlands have recently featured on a new Dunedin Information Centre brochure. Any member wanting one of these brochures should write to Grant Dumbell.

Presidents Report



Howard Egan describes the building of his waterfowl aviary to Sylvia Hayes.

I know that DU members will be saddened to hear that one of the key figures who featured prominently in our progress at the Sinclair Wetlands, Bill McLay, passed away in January. Bill was Clerk-of-Works during the construction of the Educational Centre and performed outstanding work for Ducks Unlimited. Bill's input was so valuable that I will be suggesting to the DU board of Directors that we find some way of including Bill's name at the Sinclair Wetlands, in memorium.

The mallard situation at the Sinclair Wetlands has not improved and there are few mallards in the area, but the good news is that the NZ Paradise shelduck population is rapidly expanding, as are the Grey Teal and NZ Scaup populations.

Going back to expenditure at the wetlands, the whole programme is a very expensive one for a relatively small organisation and total costs are expected to be between \$400,000 and \$500,000. The Educational Centre is currently insured for just over \$350,000 and for the last two years we have seen the insurance premium sponsored by NATIONAL INSURANCE, Dunedin - another outstanding example of support for what we are attempting to achieve at the wetlands. This goes hand-in-hand with all the other great financial support we have received. We haven't finished yet and Grant Dumbell is working hard to obtain further financial support. If we make progress in this direction it will mean that we can complete short and long term plans much more rapidly.

In respect of fund raising, the Pearce Wetlands fund raising programme got off to a good start with some outstanding contributions - LITHOGRAPHIC SERVICES LTD, THE BROADLANDS WILDFOWL TRUST & BRENDAN COE have become our first FOUNDATION SPONSORS. BRENDAN AND

LITHOGRAPHIC SERVICES LTD have also informed us that four issues of FLIGHT will be produced at no cost to DU - providing the equivalent amount of money (around \$15,000) is used to pay off a slice of the mortgage on the Pearce Wetlands. This is an absolutely magnificent gesture and we thank Brendan and his Company for this outstanding input - another fine indication of support for Ducks Unlimited.

A good number of contributions from members have also been received, but if you can all find a few dollars to contribute to the fund it will be gratefully received and will help get the mortgage down to a level that will make our over-worked Treasurer much happier. Another fund raising notice appears in this issue.

Another way you can help Ducks Unlimited is to get a friend to join - or sponsor a friend a DU membership. Another membership drive will be launched in the near future, as the first one raised over 70 new members and was a total success. For the past two years I've been involved with the NZ Technical Correspondence Institute's highly successful courses, Firearms Safety and Bush Safety (see last FLIGHT), and it is particularly pleasing to see a steady trickle of new members joining DU when they have successfully completed either of these courses, as each student receives a Ducks Unlimited membership form with their final assignment package. In the Firearms course Ducks Unlimited actually receives a good mention in the section which deals with hunting ethics and the need for wildlife conservation. But we do need many more members if we are to continue our vital work with waterfowl and wetlands. See what you can do!!

Neil Hayes PRESIDENT

IN THIS ISSUE

Presidents Report	3
The Mallard Debate	4
D.U. News	12
Project Reports	13

Cover Photo: The Mallard debate continues. Photo: Fred Gillespie.

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 Grete", 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 \$27.50 per annum, Trade and Sponsor membership is \$55.00 per annum, and Life membership is \$550.00. Membership carries a subscription to "Flight", the official quarterly publication of Ducks Unlimited which currently reaches 2000 members and friends concerned with waterfowl conservation. Letters, 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.

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THE MALLARD DEBATE

John Dyer and Rob Soulsby, both Acclimatisation Society staffers from opposite ends of the country, present their views.

Habitat is the Answer

John Dyer

Recently prominent DU members have stated in addresses and in print that the wild mallard population may have dropped from five to one million birds. Otago and Wellington, for instance, have been said to have substantially reduced duck numbers. In Auckland, paradoxically, we have had record production years in 1988/89 and 1989/90, however the writing is on the wall. Wetland destruction proceeds at such a pace it is obvious that mallards and all ducks are in jeopardy.

It is my belief the grey duck collapsed because it (alone with shoveler) is a late nester. Wetland drainage isn't so much making wet areas into dry pasture as simply reducing the period wet areas are inundated. Consequently while flood waters continue to collect in low lying areas the drains, dykes, pumps and other measures ensure the water is rapidly removed. While rains are frequent such drainage measures are out paced and some water remains available long enough for the opportunistic mallard to raise its brood.

However by the late spring, early summer the capacity of the drainage works can usually cope with precipitation and the poor old grey doesn't see its brood through to fledging. Conversely when this late breeding season period is unusually wet grey numbers are usually high the following season. Similarly there are pockets in our district where grey duck continue to make up the major part of the bag still but these are invariably prime wetlands in a more natural state of drainage.

The drainage of wetlands isn't something left over from our pioneering days. It continues today more than ever before. Whereas last century digging was done by gangs with shovels, wheelbarrows, horses and carts, now hydraulic diggers with buckets and arms that seem to get larger on every new model are utilised. Furthermore pump technology has improved out of sight. The old flap valve still has its place, allowing water passage only one way, but pumps with up to 328,000 litres/minute capacity are now in use. These ensure floodwaters are quickly removed and their design is such neither dead sheep, nor fence posts or other floating debris will stop them.

Let's take specific examples from the Waikato "duck factory", to illustrate wetland loss. (The following are among the Waikato's major wetlands).

Lake Kimihia - reduced from 316 hectares to 58 for coal production. Polluted with "Kaolinite fireclay" from spoil (overburden) heaps.

Lake Waahi - macrophyte beds collapsed 1978 following massive discharges of phenols (up to 369x the recommended limit) from a carbonette manufacturer. Swan numbers plummeted at this point from 1,400 to 220 in 1981.

Lake Whangape - three coal mines discharged into a tributary stream. Despite the closure of the major mine the un-rehabilitated site continues to discharge. Macrophyte collapse blamed on silt with subsequent major drop in swan feeding grounds.

Lake Waikare - manipulated for flood control in 1965. 70% of all mineralized wetland consequently lost. A further 300 hectares became accessible to stock on a year round basis. The 20-35,000 waterfowl present prior to this work made it the largest concentration of waterfowl on a regional basis in all of New Zealand. In 1976 macrophyte collapse occurred and the waterfowl numbers fell away.

Whangamarino Wetland - some 3,350 ha drained (59%). The 1965 population of 40,000 mallard dropped to 20-25,000 following "floodworks".

Motukaraka Wetland - 1499ha drained 1967

and Mangatawhiri Wetland 1,200 ha drained late 1970's.

As a point of interest there is a proposal to reflood 2,000 hectares of the, Whangamarino. One farmer whose farms' Government valuation is \$546,000 expects \$1.5 million compensation for his 140 hectares. Nor is he unique in wanting a kings ransom.

The Waihou River - this was channelised which meant not only the brutal realignment of the bed but also, in the name of willow control, every tree from punga up was ripped out. The banks are now falling in. Following this lowering of the river most of the peripheral wetlands on private land subsequently became economic to drain and were lost.

Who is responsible? Ironically farmers are the cause. I say ironic because many would be incensed if anyone threatened "their" ducks. But the fact is their wetland homes are viewed in a different light. Wetlands are "unproductive" lands (of wool and butterfat) and only return income if drained.

No one is offering to assist farmers to fence or otherwise protect wetlands. Furthermore the farmer receives neither rate nor tax incentive to reserve them. The drainage levies he pays are in the expectation that Catchment Boards will assist him to drain them. If he chooses to reserve the wetland no one is offering a refund. The message is clear - "drain it".

In Canada 40% of the prairie pothole region has been drained for agriculture and also 50% of the prime US waterfowl breeding areas. In consequence American biologists are talking of ducks hitting all time lows in recent years. They are about to spend \$1.5 billion US before the year 2000 to help reverse this. In contrast 90% of New Zealand wetlands have been drained. Little wonder the grey duck declined around that period. Some wetland types such as the once vast areas of kahikatea forest are now virtually absent. 1972-8 figures show 85% of the lower Waikato "duck factory" has gone and the drainage has if anything since then accelerated. The only check, the recent rural recession, is presumably coming to an end and the pace will once again pick up.

The only optimistic thing on the horizon is the trend toward wetland purchase and development being shown by DU and some of the more active Acclimatisation Societies. However losses far outstrip gains in wetland attrition and in terms of the felt effect by the mallard population these vital projects are but a fraction of what is necessary.

Everytime even the smallest drain is dug a wetland is being drained. We all know a mallard can rear her brood in little more than a

Based on a illustration from Forest and Bird published in 1940. We can all do our bit to get back to the abundance of waterfowl in 1840.



damp patch but as each of this is turned over to "production" one less pair breed.

My answer: Overseas examples of rate and tax relief for private individuals reserving habitat show the way. Similarly developers should be made to consider environmental impacts and again overseas examples show that many are willing to build 4 hectares of habitat for every one they destroy - if that one is in a prime location which they cannot by law otherwise develop.

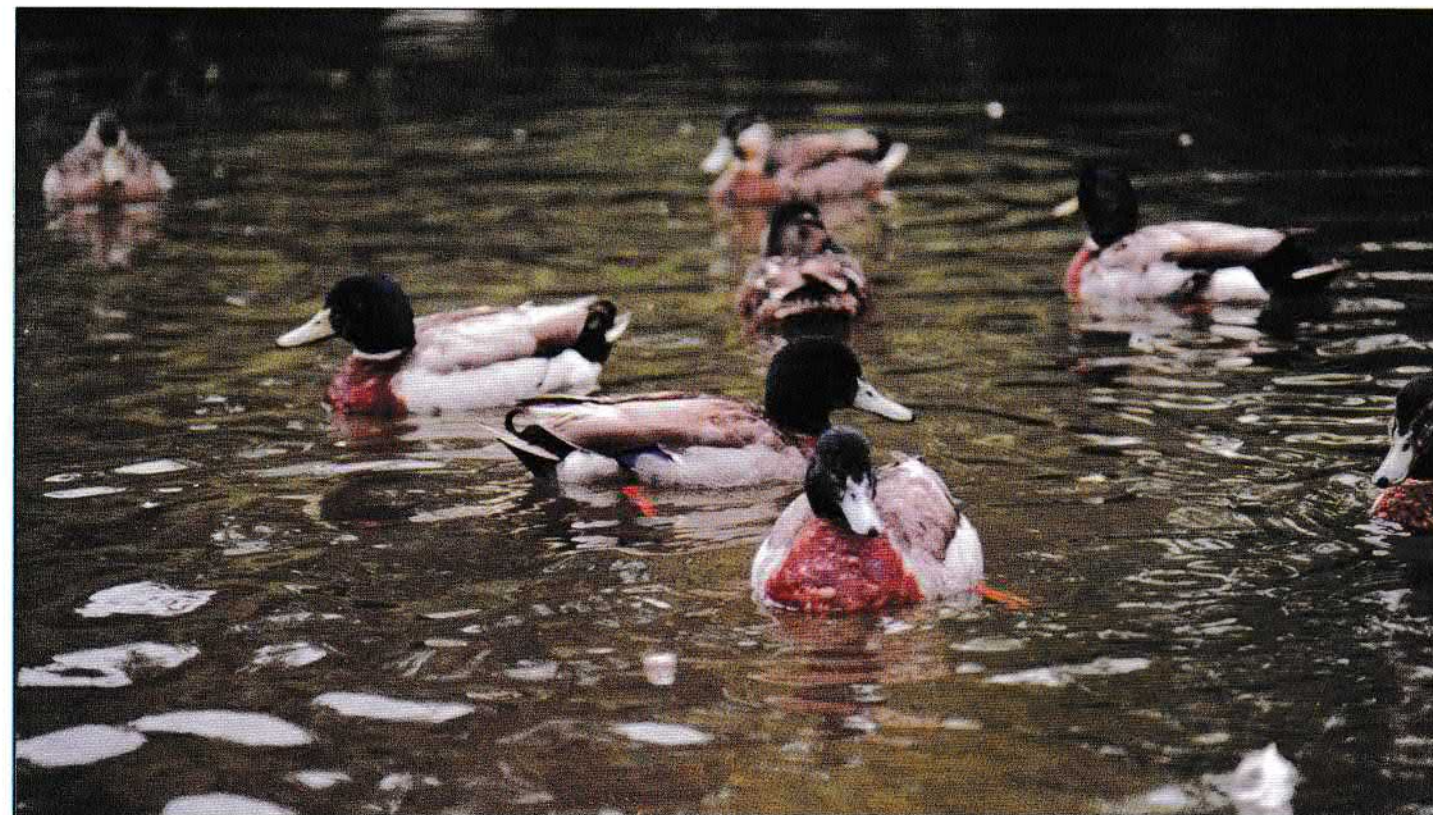
Duck hunters need to appreciate the need for wetland acquisition and insist it receive priority at Society meetings. Further they need to show more support for organisations such as DU. The idea of "Duck Stamps" or firearms and ammunition tax to be used for wetland purchase enhancement and development needs to be considered.

Enhancement of existing wetlands by planting food bearing trees, provision of cover and mallard nest baskets (thereby reducing predation) are all avenues for consideration.

Lastly other conservation organisations need to give wetlands a higher priority. While much attention has been given to saving forests, wetlands are home to more species of NZ birds than any other major habitat.

Without large scale measures to halt and reverse wetland drainage we can take it for granted that if mallards aren't already on the decline then that they soon will be inevitable.

We have all seen what one man, Horrie Sinclair, could do by putting his money where his mouth was many years ago. How many \$100,000 wetlands are there now that future generations will look back on and wonder why on earth we didn't buy when they were going so cheap?



Mallard populations fluctuate widely throughout New Zealand. All contributors to the debate are agreed that habitat retention and development is the principal management tool in the effort to boost waterfowl populations.

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Mallard-Management the Otago-Southland Perspective

Rob Soulsby

INTRODUCTION

This article has been written for the Otago and Southland Acclimatisation Societies in response to the article "The Mallard in New Zealand" by Neil Hayes in the March 1989 issue of Flight magazine. It will address the aspects raised in the article, comment on current management philosophy including the setting of game season regulations, provide perspective on population trends and waterfowl studies in Otago and Southland, and comment on future management needs.

PROPOGATION AND ESTABLISHMENT

The first mallards introduced into New Zealand were of English origin (Thomson 1922). While the mallard is now found in both Australia and New Zealand it was introduced by colonists from the northern hemisphere where the species is widely distributed.

The significance given to Southland Society's mallard liberations in the early 1900's as a factor in the establishment of mallards in southern New Zealand is over-emphasised. While game farm style propagation and liberation of mallards was responsible for their successful establishment in New Zealand, these efforts were only needed for the initial establishment due to the adaptability, mobility and pioneering nature of the species. There is little doubt that the widespread liberations of game farm reared birds artificially accelerated this spread and establishment. The Otago Society had already made a number of liberations prior to the Southland liberations between 1910 - 18 with the initial liberation in Otago occurring in 1867 (Thomson 1922). These birds thrived being put on the game licence in 1915 with a bag limit of 12 birds per day (OAS annual report 1915). In fact the mallard population continued to increase and extend its range so that by 1919 the mallards were reported as having "thrived well and established themselves ... being very wary and shy of decoys there are very few shot". This was in contrast to the native grey duck, then the predominant duck species, which was easier to decoy and was regarded at the time as a vastly superior sporting bird (OAS annual report 1919). It is therefore fair to say that the success of the mallard in Otago was in no way attributable to the Southland releases between 1910 & 1918 as the mallard was clearly well established and plentiful in Otago by this time.

Taking into account the relatively sedentary nature of the English stock used for these early liberations, current information on dispersal, (which shows limited movement), the small number of birds released, the likelihood of competition with existing duck populations, and unknown nature of the liberation in relation to chances of survival to breeding age, it is very unlikely that the liberation in Southland between 1910 and 1918 contributed to anything

more than an initial establishment of the mallard in Southland.

An important milestone in the history of the establishment of the mallard in New Zealand was the introduction and liberation of mallards from migratory North American stock beginning in the 1930's. It was the propagation and liberation of the progeny from this stock that led to the success of the mallard in New Zealand. (Williams 1981). Mallards from migratory North American stock were reared in North Otago in 1939. Establishment of these birds proved to be of greater success than the mallards of English origins, and by 1944 the mallard was represented in the bags of most shooters in the district (OAS annual report 1944).

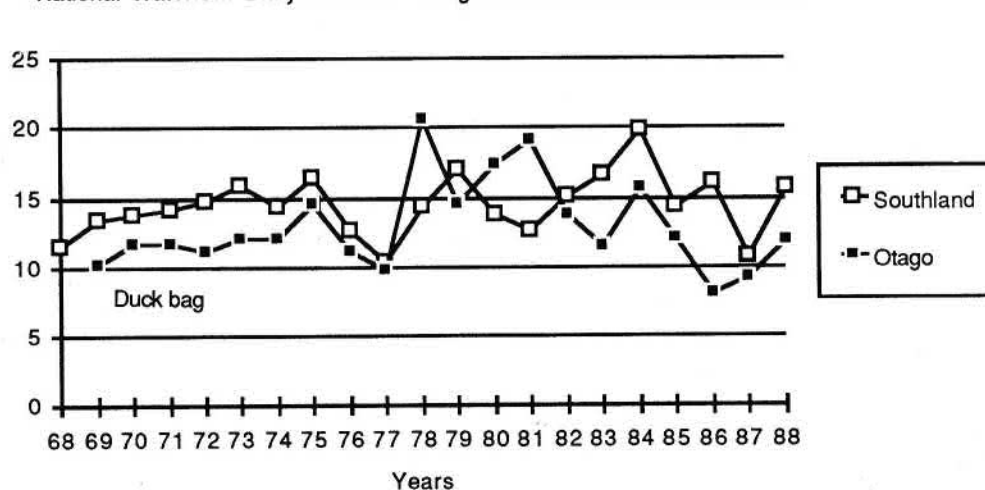
POPULATION TRENDS

The term population explosion to describe the population peaks in the late 70s and early 80s is a considerable overstatement of the actual situation. This is unfortunate as the word explosion tends to give rise to the idea that ducks were reaching plague proportions and greatly exceeded previous population levels. This was far from the case as I will explain.

Unfortunately we do not have methods for accurately determining population size. The only way this can be done at present is by extrapolation from hunting diary information (the National Waterfowl Hunting Diary Scheme). This must be done with caution as we do not know how well diary information reflects actual mallard population size. There are also other problems that are inherent in diary schemes that must also be taken into account. These include identification of birds bagged, non response bias, and missing data (Soulsby 1982). Nevertheless this information is the best we have at present.

Assuming that hunting diary information gives a good indication of waterfowl population size going into the game season we can look at returns to hunters over the duration of the scheme (1968-1988) and examine long and short term population trends. A graph of the opening

Opening weekend combined Mallard and Grey duck harvest trends taken from the National Waterfowl Diary Scheme - Otago and Southland Acc. Districts.



weekend average mallard and grey duck bags for the Otago and Southland Acclimatisation Districts shows some interesting results. Mallard and grey duck bags have been combined for examination of harvest trends due to large degree of niche overlap, introgressive hybridisation, and misidentification by hunters (Soulsby 1982, Gillespie 1983). It is considered that the combined bag most accurately reflects population trends. Only opening weekend bags have been used as these are expected to give the best indication of population size. Variation between season will no doubt have some effect on opening weekend bag size due to differences in weather patterns, water levels, bag limits, and possibly even hunter skill and equipment however these influences must be regarded as insignificant if we are to examine population trends from hunter bag data. The "rest of season" bags have not been used as these have the potential for great variability due to changes in season length and hunter effort making this data considerably less reliable.

OTAGO: Examination of the harvest in Otago in more detail reveals that hunter success clearly peaked between 1978 and 1981. In three of these four years bags were noticeably higher than any previous years. In these years average bags were 10-30% greater (2-5 birds) than other years and even in this period bags varied up to 30% from one year to the next. Since 1981 there has been a definite downward trend however this too has shown considerable fluctuation. It is apparent that the 1979-81 period should be considered as a population high with the normal population level considerably below this. The population reached a low in 1986 and 1987 and recovered considerably in 1988. Overall the degree of fluctuation has been within the range experienced in past seasons and has not unacceptably been beyond that of past years.

It is evident that mallard population levels in many parts of Otago are low. This is understandable due to the widespread drought conditions that occurred through large parts of the district. Results to hunters in many areas have therefore been poor. On the Taieri Plain observations by Society Field Staff and Otago Catchment Board rainfall records show a major drought during the winter, spring and summer of 1988 and the autumn of 1989 which many farmers in the area consider to have been the driest period in memory. The Otago Society undertook waterfowl counts in the Waiholo/Waipouri wetland complex during April this

year prior to the game season to assess the effects of the drought. The number of birds present were similar to that of 1982, a good year for waterfowl. However this was due to congregations of birds on the remaining areas of permanent water. The accuracy of the waterfowl count figures for the Waiholo/Waipouri Wetlands in past years in Mr Hayes article are very doubtful, and I believe claims of 100,000 birds is a vast over estimate. I suggest that in a good year 10,000 birds would be a more realistic figure. Given wet conditions in late winter and spring sufficient to provide feeding areas for adults and brood rearing habitat (ditches, drains, ponds and wet or flooded paddocks), we can expect a considerable recovery from this situation.

SOUTHLAND: In Southland there has been no peak but a gradual trend of increasing bags within broad fluctuations. The only year that bags were somewhat down on other years was 1987 and even then the bag was within the range experienced over the last few years. Clearly in Southland there is no evidence of a population crash or long term population decline. In contrast to Otago, Southland has experienced typically wet conditions over the past two breeding seasons and mallards are flourishing throughout the district. Excellent bags were reported throughout the 1989 game season and this was confirmed by a district-wide hunter diary scheme.

The former head of the New Zealand Wildlife Service, the late Dr Gordon Williams gives an excellent account of the events in relation to mallard populations that are currently of widespread concern to many hunters and waterfowl conservationists. In his publication "Why Do The Number of Game Animals Change?" Dr Williams states

"a little thought or observation will soon convince us that the numbers of animals are subject to continual fluctuation. In wild animals of little value to man these changes in numbers, although often of some magnitude may go almost unnoticed unless particularly looked for; but when pests or game animals suddenly undergo a marked change in numbers in the wrong direction then the alteration of what has up to now seemed to be the status quo soon becomes a subject for general concerns... but unless really big and prolonged changes occur there is no cause for anxieties... as ... fluctuation in the number of animals is quite a natural state of affairs as most animals have excellent powers of recuperation after temporary population set-backs".

It is these temporary set backs that are currently being experienced in many parts of Otago and further north. The ability of game populations including mallards to recover from these set-backs is well-known. Many game birds including mallards have breeding strategies that allow them to produce large numbers of young when conditions are suitable. And thus the population literally "bounces back" to former levels.

To understand the reasons for these fluctuations in game bird numbers it is important to understand (a) the biology of the game species and (b) the factors that have the most influence on population size. This includes the effects of hunting. Again Dr Williams statements on the factors that regulate population size are highly relevant. He states;

"because it will help us understand the complexity of the problem that faces anyone setting out to study the causes of the changes we



Habitat development at Waikanae, North of Wellington.

notice in the number of game animals [this is exactly what is required of the game bird manager] it is worthwhile to summarise the more important influences that play a part in determining the number of a particular animal in a particular area and a particular period of time. I hope that I will be able to give some idea of how involved even the simplest situation in nature can be and how the interaction between each of the main environmental factors as well as the influence of each of these on the game population is itself by no means a one way affair. A list of the factors are weather, food, cover, predators, parasites and disease and competition.

The influences of man including hunting are also important considerations. This leads me now to discuss the factors listed by Mr Hayes as a reason for the claimed population decline.

DROUGHT

There is no doubt that drought has reduced dabbling duck productivity due to a reduction in wetland and feeding areas that provide adult birds with sufficient food to gain peak breeding condition. Research has shown that when mallard hens do not obtain sufficient food of the right kind clutch size and egg size are reduced. Smaller clutch size reduces the reproductive potential and ducklings hatched from large eggs. (Pehrsson 1986). Drought also reduces the amount of brood rearing habitat. The reduced food availability is also likely to have a detrimental impact on dabbling duck populations outside of the breeding season.

During a recent seminar to game bird managers and researchers in New Zealand, Dr Jim Nichols, a leading waterfowl biologist for the U.S. Fish and Wildlife Service explained that extensive survey work in the USA has shown that the greatest factor influencing mallard reproduction is the number of spring ponds (breeding and rearing habitat) (Krapu et. a. 1983).

In Otago we are currently investigating this concept by examination of harvest size in relation to rainfall in each of the Waitaki Valley, Otago and Southland Acclimatisation districts. These investigations have only preceded on a preliminary level at this stage, however, statistical analysis has shown a strong correlation between rainfall and mallard harvest in the Waitaki Valley District. The other districts have

not yet been analysed. Southland Society have begun to investigate methods of determining productivity by brood transects. This is still experimental but is showing promising results.

It is clearly apparent however that rainfall regulates the amount of breeding and feeding habitat and is a major factor influencing duck abundance from year to year, an environmental factor that game bird managers have no influence over.

HABITAT DESTRUCTION

Habitat loss is the principal threat to long term waterfowl abundance. However it is virtually impossible to determine the actual amount of wetland lost over a short period of time say 5-10 years, and relate these losses to waterfowl abundance. Acclimatisation Societies recognise habitat as a key to maintaining waterfowl numbers and as a result the major thrust of Societies workload is towards habitat protection. However in spite of the maintenance of wetland habitat we can still expect low duck populations when environmental conditions such as droughts are unfavourable for reproduction and survival. The important thing is to ensure that the habitat is retained and is therefore available for waterfowl during favourable conditions for duck survival as is the case in wet years. Societies also encourage habitat creation to help replace losses through drainage and reclamation. While the contribution by ponds is small on the overall scale it does provide some stop gap to habitat losses as well as providing hunting areas. The Southland society this season alone assisted in the construction of at least 42 ponds in the Southland district.

GRAIN PRODUCTION

Large grain stubbles provide feeding areas for large numbers of mallard, grey and paradise shelduck during the late summer, autumn and winter. It is unclear just how significant stubbles are as a food source for the survival of fledged birds leading up to the game season. A drastic reduction in the amount grown in a specific area may however impact on duck numbers locally. This aspect has not been fully researched. It is considered that grain is less important than brood rearing habitat as a factor regulating mallard abundance.

Otago Society has made a preliminary examination of grain harvest figures in relation to duck harvest and has found no apparent link. This work requires more detailed investigation. Again like rainfall the amount of grain grown is beyond the control of gamebird managers.

LIBERAL HUNTING REGULATIONS

In the early to mid seventies, acclimatisation societies were given the option to liberalise hunting restrictions. The main reason for relaxing many of the hunting regulations was to encourage and allow a greater harvest of the mallard population. To determine the effect of these regulation changes we must consider the impact this liberalisation has had on the mallard harvest and subsequent population levels. I will deal with each type of regulation separately however it is the collective effect on the population that is of prime importance.

Pond Feeding and No Decoy Limit: In 1974 the limit on the number of decoys that could be used by any one hunter was removed and about this time pond feeding was also permitted. The relaxation in these regulations have now been in existence for some 15 years. A six year experiment to investigate the effects of pond feeding on duck harvest was concluded in 1973. This experiment clearly showed that

THE PEARCE WETLANDS

DUCKS UNLIMITED'S WAIRARAPA WILDERNESS

During 1988, Ducks Unlimited purchased the Pearce Wetlands, a 309 acre piece of the eastern shore of Lake Wairarapa, and one of the last areas of shoreline still in private ownership. We made this bold move once it became apparent that the Department of Conservation, crippled by Government imposed funding cuts, could not take up their option on the property. In our ownership, the area's outstanding wetland values will be protected for the future, something that could not be guaranteed had someone else beaten us to it.

And outstanding its wetland values truly are! This area is used by a staggering array of birds, something which is hard to imagine when standing on its flat, soggy, landscape. Yet it is these very characteristics which make it the jewel in Lake Wairarapa's crown.

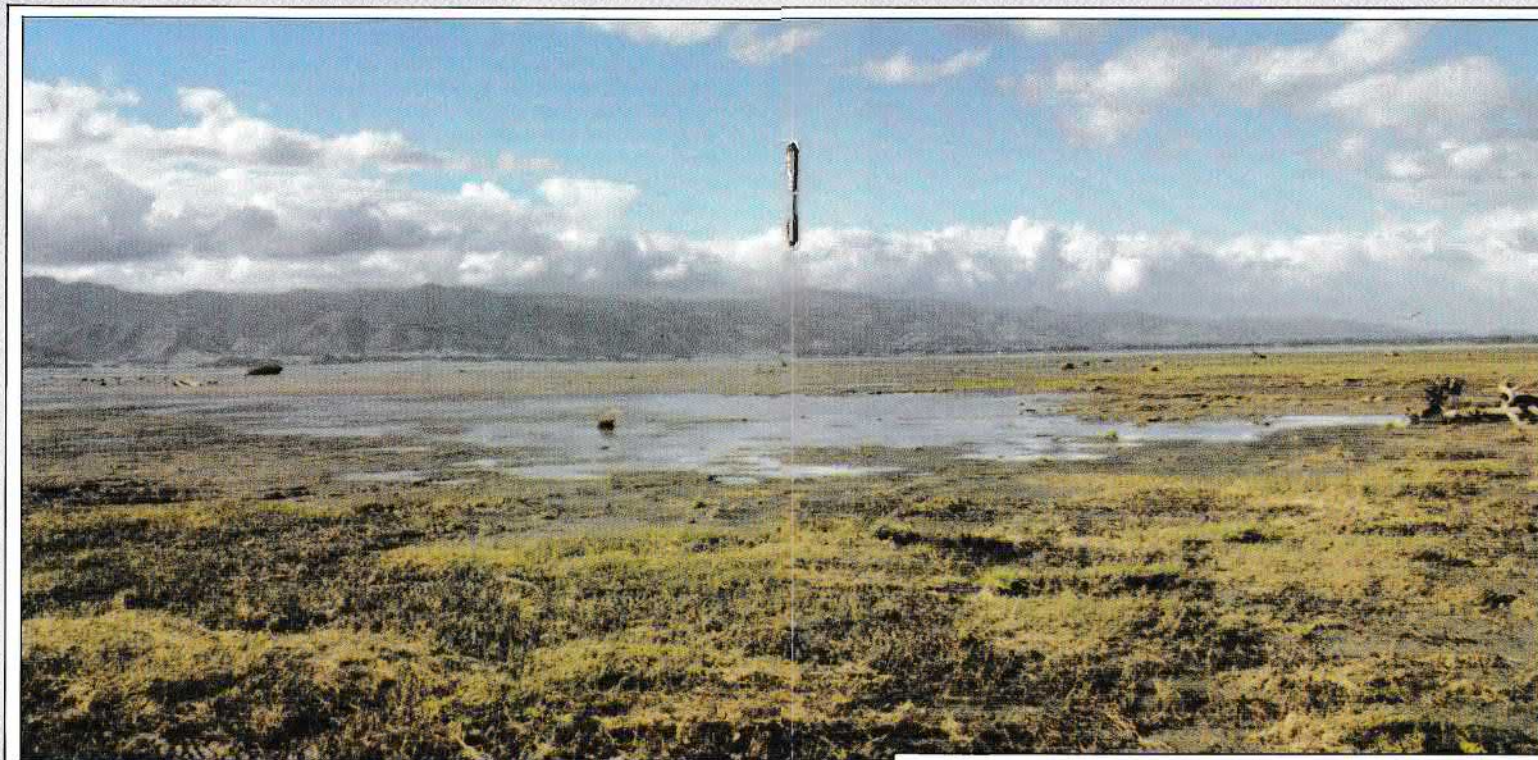
When the nor-westers blow the lake reclaims the area and floods it completely. When the weather is more settled, the waters recede and the flocks of ducks, geese, swans, stilts, herons, oystercatchers and dotterels move in to feed the shallow pools that remain.

Spring migrations bring waders with names like Yellowlegs, Greenshanks, and Sandpipers from Siberia and Alaska, while winter migrations may bring the Black Stilt, the world's rarest wader, from the braided riverbeds of Canterbury. The odd Australian visitor also appears, whether it be a Glossy Ibis or a Chestnut-breasted Shelduck.

In order to let the secret of the Pearce Wetlands out, Ducks Unlimited is now launching a Pearce Wetlands fundraising drive. Members who wish to contribute to this project can help by simply clipping the coupon and sending a donation. As with all Ducks Unlimited's fundraising, contributions are tax deductible and we will issue you with a receipt.

However, if you want to become more closely involved with the project, Ducks Unlimited is offering a strictly limited number of Foundation Sponsorships. Should you wish to have more information about this scheme, please send us the coupon below indicating your interest. We will mail you our in-depth brochure, "The Pearce Wetlands: An Introduction", which outlines, in more detail, the benefits of becoming a Pearce Wetlands Foundation Sponsor.

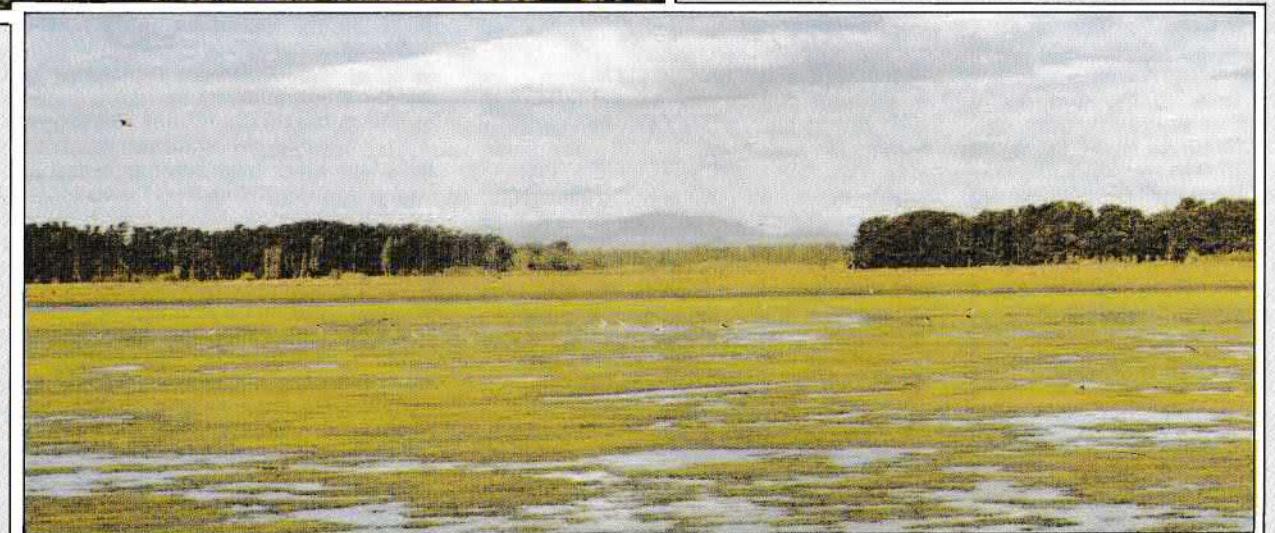
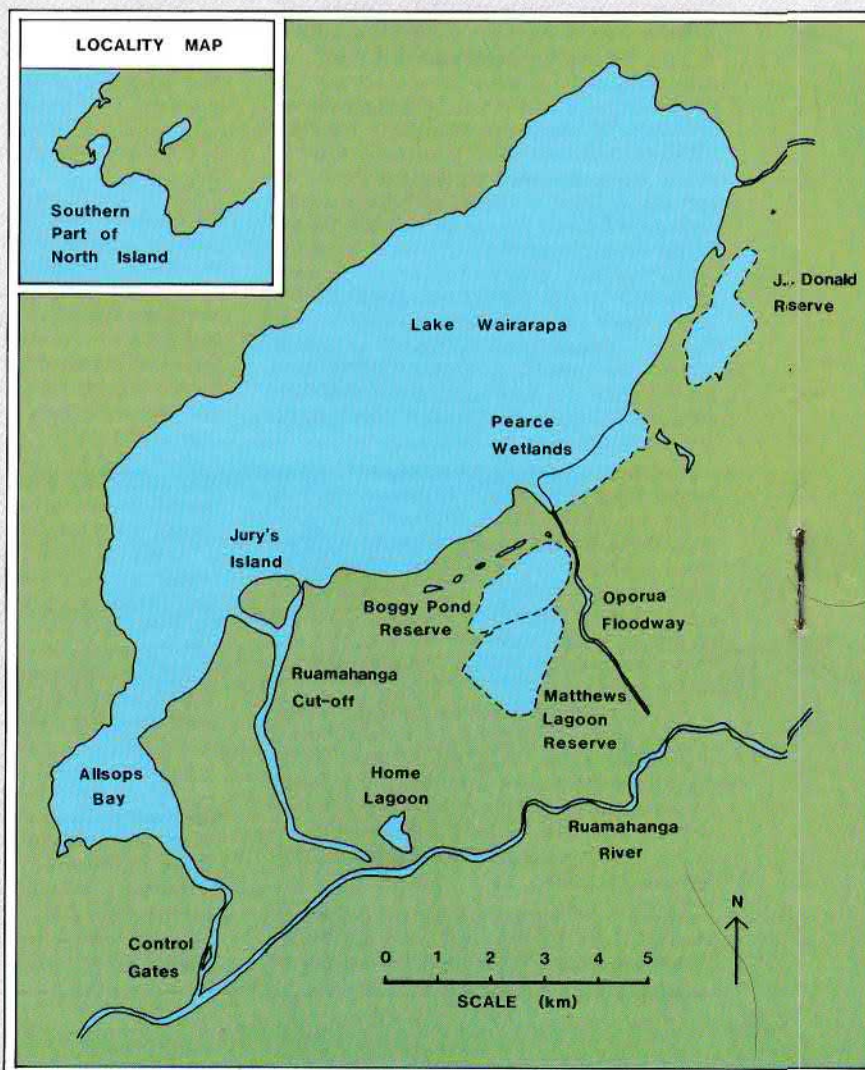
If you are "For Waterfowl and Wetlands", as we are, you will realise that this project is a significant undertaking for Ducks Unlimited. We hope you will support our continuing development by supporting the Pearce Wetlands.



Views of the Pearce Wetlands. A magnificent area for waterfowl and wadingspecies.



A shoveler drake, a common species at the Pearce Wetlands.



Pied stilts and herons on the wetlands.

PEARCE WETLANDS FUNDRAISING APPEAL

Please send me more information on becoming a Pearce Wetlands Foundation Sponsor YES / NO

Please receipt my donation of \$ _____

My cheque is enclosed YES / No

Please charge my VISA / BANKCARD No. _____

Expires _____ Signature _____

Name : _____

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Feature Article

hunters on fed ponds shot more birds than hunters who did not pond feed (Caithness 1973). While these activities are widely used and provide conditions that allow for greater harvest there has been no apparent detrimental effects or reports on population level. These regulation changes can therefore be discounted as being detrimental to the mallard population.

Unpinned Magazine Shotguns: Unpinned autos were legal in Southland in 1985 only and were legal for only three years in Otago from 1984 - 1986. Hunter surveys by Otago Society staff during the 1984 & 1985 game seasons showed that only 20-25% of hunters used semi automatic guns. Many of these guns were pinned or were only capable of two shots. Also, the opportunity to use the extra shots was not always available. However, there is no doubt that an unpinned auto in the hands of a competent shooter did result in the downing of a greater number of birds than would otherwise have been possible. We consider however that the use of automatics for this period did not significantly increase the mallard harvest and therefore had little impact on the mallard population.

Increased Hunter Skill: Promotion of hunting techniques to improve hunter success have been an on-going part of Society work. The provision of information and advice to persons authorised to hunt or kill game is a statutory function of acclimatisation societies under section 30 of the Wildlife Act. Promotional activities have included publication of books and handouts and regular press releases. The Southland Society has been particularly active in the promotion of game bird hunting skills through educational classes.

I agree with Mr Hayes that hunters now have a better range of hunting equipment in the form of camouflage gear, ammunition, calls and decoys to allow them to become better equipped to bag waterfowl should they wish to use this information and equipment to their full advantage. Society field officers are now observing a greater number of hunters who are putting in effort to obtain correct gear to improve their hunting success. There has also been a considerable demand for advice on how to improve hunting techniques. It is apparent that the improvements in hunting skills are resulting in greater hunting success. These factors

have the potential to greatly increase the mallard harvest. The degree to which the harvest is increased depends on the number of hunters that are prepared to make the effort to improve their hunting effectiveness, and the amount of hunting that they do. At present these factors are not considered to be causing excessive hunting pressure. Should it be considered necessary regulations restricting the use of specific hunting equipment could be re-introduced, however, control of harvest size by reductions in bag limits and season lengths are more appropriate.

Increased Daily Bag Limits: The daily bag limit for mallard was increased from 15 to 25 birds per day in Otago in 1977. The Southland Society were more conservative in their approach and raised the limit from 15 to 20 birds in 1980 and from 20 to 25 birds in 1982. Before making judgement on the impact of these changes we must consider the effectiveness of both the old and new limits in terms of restricting the overall harvest. Generally speaking if the limit does not limit a large proportion of the hunters then it is ineffective in reducing the harvest. On the other hand if the harvest is being restricted then we must consider the contribution that birds that are not shot, make it to the population the following shooting season. This latter question is a complex one and is very difficult to address, however, as you will soon see this second question bears no further consideration.

The Otago Society has undertaken several hunter surveys since the early 80's to investigate bag limit effectiveness. Both Otago and Southland Societies combined to undertake a major hunter survey during the 1987 game season and Southland repeated this survey for the 1989 game season. The results of these surveys have shown that current bag limits are not effective and hunters are therefore essentially hunting without a bag limit (Soulsby 1982, 1987, 1989, M Sutton pers. comm.). Furthermore it appears that the previous limits of 15 birds per day was also not effective. The increase in the daily bag limit to 25 birds has not had any significant effect on the harvest and subsequent mallard population level with the exception of allowing hunters who had the opportunity of bagging more birds to do so legally. In effect the higher limit has only given the hunters the legal opportunity to harvest a

greater number of birds in years when mallards have been more abundant.

Extended Seasons: To facilitate greater harvest by providing greater hunting opportunity season lengths were gradually extended from five weeks (1977) to 12-13 weeks (1983-86). These latter seasons involved closing dates at the end of July. At a glance the increase in the duration of the game season from 5 to 12 or 13 weeks, an increase of some 250%, appears colossal. However we must consider how this translates to total mallard harvest to get the real picture. To do this we have investigated how the harvest occurs during the game season (known as harvest chronology). Again the Otago-Southland Hunter Survey during the 1987 game season (8 weeks long) has provided the most extensive data base. This survey showed that about 60% of the total harvest occurred on the opening weekend alone and that about 90% of the harvest had occurred by the end of the fourth week of the season (Soulsby 1989). The last four weeks of the season accounted for only 10% of the total mallard harvest. A similar harvest chronology pattern occurred during the 1982 game season (Soulsby 1982). There is also evidence to suggest that the increase in season length has not resulted in greater hunter effort but merely allowed hunters greater flexibility in which to choose when they go hunting. Banding studies currently in progress in Southland to investigate the impact of harvest have shown that around 30-40% of the mallard population is harvested, by hunters each game season. This information alone tells us that we are probably not over harvesting the mallard due to the high reproductive potential of the species. Multiply this figure by the 10% of harvest occurring in the last 4-8 weeks of the game season (depending on season length) and we find that a mere 4% of the total population is harvest in this period. This harvest is insignificant in terms of the total population. We can therefore conclude that the extended season has not greatly increased the mallard harvest but importantly has provided greater hunting opportunity and flexibility for hunters to decide when they wish to go hunting.

A question not raised by Mr Hayes is the effect of hunting in late July at a time when many birds are establishing territories and early breeders have begun nesting. As already mentioned the number of birds harvested in July is small on a population level and is therefore insignificant. Disturbance is a possible cause for concern however harvest trends indicate that this is not of significant detriment to mallard reproduction.

EFFECTIVE HARVEST REDUCTION

The question of daily bag limits and season lengths that would be required to effectively reduce the harvest has been considered. Dr Nichols considers that to "save" ducks we would be required to reduce the harvest by about 50% in order to be certain of a significant increase in the number of birds that survive to enter the following breeding season. Examination of bag limit and effectiveness and harvest chronology from the Otago-Southland Hunter survey show that this would require a daily limit of 2-5 birds and a season length of between two days (opening weekend only) to seven days duration. Such severe harvest restrictions would only be implemented if there was considered to be a need for significant harvest reduction. This would be most likely to occur when either (a) the population was very



Our Wetlands are being screwed. This archimedes screw pump on the Maramarua sucks 470 million litres a day down the drain. Photo: John Dyer.

low due to severe drought conditions, or (b) excess hunting pressure was known to be causing the over hunting. In spite of drought conditions in parts of Otago, it has not been considered necessary to change the game season regulations, as any changes are pointless unless they have an effect on the population level. For example assuming similar levels of hunting effort as in past years a reduction in the daily bag limit to 15 birds, as suggested by many hunters, would only reduce the total harvest by about 10%, well short of the 50% considered to be necessary by Dr Nichols.

In summary, by using harvest trends as an indicator of population size it is clear that liberalised harvest regulations have had a minimal impact on the size of mallard population. From knowledge to date we consider that rainfall is the most significant factor contributing to population fluctuations and that variations in grain production and loss of habitat are also significant influences. From interpretation of current information it appears that there has been no massive population reduction as Mr Hayes claims despite the widespread belief that this is the case. The mallard is in fact holding its own but experiencing major population fluctuations similar to those that have occurred in the past and are typical of wild gamebird populations. Similar population fluctuations will continue in the future and should be accepted as a normal occurrence due to the wide range of factors that influence game bird numbers.

INFORMATION NEEDS

Effective management is based on sound information. I agree with Mr Hayes and Richard Barker that more information for management of the game bird resource is essential. To this extent I endorse Richard's comments on the subject. However the question of population regulation and the effects of hunting are complex ones that require considerable thought and planning as the information collected must be reliable to be of any use. The nature of many of the questions being asked are such that few answers will be readily available in the short term and therefore work on these subjects must be on a long term basis to be of value. Methods of information collection must therefore be sustainable to provide information for long term comparisons to be made as well as being practical and cost effective.

The lack of information on which to base management decisions has been recognised by

Feature Article

gamebird managers for some time. A start was made in some areas following the production of the Wildlife Research Liaison Group Report on game birds. This initiative was not continued. Meetings to discuss information needs have made good progress and a case for gamebird research has been put to DOC outlining the need for more information and a commitment to gamebird research by the department. Funding cuts to DOC have greatly hampered this and are partially to blame for the lack of action.

To help address the need for more information to manage the gamebird resource and co-ordinate research activities acclimatisation societies are in the process of establishing a national game bird technical committee. This committee has several tasks before it and should see greater attention given to game bird management issues once the restructuring of fish and game management has been completed.

ACKNOWLEDGEMENTS

I would like to thank Roger Sutton and Southland Society Staff for their information and comments.

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DUCKS UNLIMITED (N.Z.) INC

P.O. BOX 44-176, LOWER HUTT

1990 ANNUAL CONFERENCE
THC TOKAANU

Saturday & Sunday July 14th & 15th 1990

A field trip to the Hinemaia Dams will take place on Sat 14th, leaving THC Tokaanu at 9.30 a.m.

a \$50 registration fee is required and must be included with this form.

I/WE WILL BE ATTENDING THE ANNUAL CONFERENCE.
I/WE WILL REQUIRE ACCOMODATION

FOR NIGHTS ON
DEPOSIT \$30 REQUIRED DATES

NUMBER ATTENDING

NUMBER OF ROOMS REQUIRED

NAME/S

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CARD No.

EXPIRY DATE

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REGISTRATION FEE OF \$50 IS ENCLOSED

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DIANE PRITT, SMITHS ROAD,
OHAKUNE
(PHONE: 0658-58016)



Good habitat equals lots of birds. This photograph was taken by D.U. member Graham Johnson at Awaiti swamp near Paeroa.

MOHAKA RIVER

The Hawkes Bay Acclimatisation Society and the North Island Council of Acclimatisation Societies have applied for a water conservation order on the Mohaka River. The tribunal hearing the submissions is expected to reach a decision in the very near future.

ENVIRONMENTAL LEGAL AID

As part of the new Resource Management Act currently before Parliament, the government has decided to allow legal aid for some environmental groups. This will allow groups to take part in proceedings before the Planning Tribunal when their lack of financial resources would have otherwise excluded them. This is particularly relevant at a time when DoC and Forest and Bird are appealing to the Planning Tribunal, to curb Electricorp's water rights for the Western Diversion, in the central North Island.

CAPITAL GAINS TAX

In the past few years, the government has signalled interest in introducing a capital gains tax. This could either be a tax on realised capital gains, a tax on unrealised capital gains or a tax on the stock of wealth. As a result, the Ministry for the Environment has commissioned research into the environmental impacts of such a tax. A variety of environmental issues were considered including exploration and extraction of minerals and fossil fuels, felling of indigenous forest and draining of wetlands. This research has suggested that a tax on the realisation of assets has the least impact on environmental resources, while an annual asset tax has the greatest impact. If any member is interested, photocopies of this report can be obtained from the Ministry of the Environment for \$15.00.

RAMSAR WETLANDS IN NZ

In February, the Minister of Conservation Mr Woollaston, announced that the Whangamarino Wetland and the Koputai Peat Dome would be included on the Ramsar Convention list. These are New Zealand's two largest wetlands and are both over 7,000 ha. They bring to four the number of wetlands recognised in NZ as internationally significant, with the other two being Farewell Spit and the Waituna Wetlands, both in the South Island.

BLUE DUCK RESEARCH

The World Wildlife Fund is helping DoC in their research on Blue Duck by funding a research project on this secretive duck. The project will study the invertebrate fauna in rivers with the hope that species diversity and the abundance of food sources may provide a way of identifying appropriate rivers for establishing Blue Duck on in the future.

BOTULISM OUTBREAKS

With the prolonged period of fine weather, botulism outbreaks have been widespread. Auckland's Bird Rescue have been plucking between 30 and 100 birds daily from the Mangere oxidation ponds. Volunteers have to tube feed the birds in order to save them and so far 90% of treated birds have been saved.

BROWN TEAL SIGHTING

To the surprise of many, a sick Brown Teal was rescued from the Mangere Oxidation ponds suffering from botulism. At last report the bird was progressing well. Although mainland

Brown Teal are mainly confined to Northland, the occasional report of one on the Mangere ponds is not unusual. We intend to monitor the area, so as to find any others as quickly as possible.

FRIENDS OF THE AVON HEATHCOTE ESTUARY

We have been contacted by the "Friends of the Avon Heathcote Estuary" to notify us of their recent establishment. The aim of the group is to provide care for this important Canterbury wetland and education for members. It is encouraging to see other organisations with interests similar to DU coming into existence, and we look forward to having further contact with them.

TIRITIRI MATANGI BROWN TEAL

In 1987, DU released 3 pairs of Brown Teal on Tiri. Within 12 months these birds had bred, and in the last 2½ years, four broods have been recorded, including the latest which hatched in January. In the near future DU hopes to make a further release and to erect a permanent display board on the island.

WATERFOWL LECTURE

A lecture, illustrated with slides on "WATERFOWL - HOW THEY ADAPT TO THEIR SURROUNDINGS", will be given by Mr Kerry Muller, manager of the Wellington Zoo, in the Tutorial Block of the Masterton Hospital on Saturday May 19 at 7.30pm (use Blair St entrance).

Kerry Muller was born in California, started work as a bird keeper at the San Diego Zoo and worked his way up to supervisor. He then became curator of the birds at the National Zoo, Washington. In 1970 he held a similar position at the Taronga Zoo, Sydney. Eight years later he returned to the San Diego Zoo as Bird Curator. In 1984 Kerry became manager of the Wellington Zoo. He holds a degree in Zoology.

The Wairarapa branch of the Ornithological Society extend an invitation to members of Ducks Unlimited to attend this evening. If there are any enquiries, please contact Bill Clinton-Baker at (059) 27801.

DUACK DINNER/AUCTION

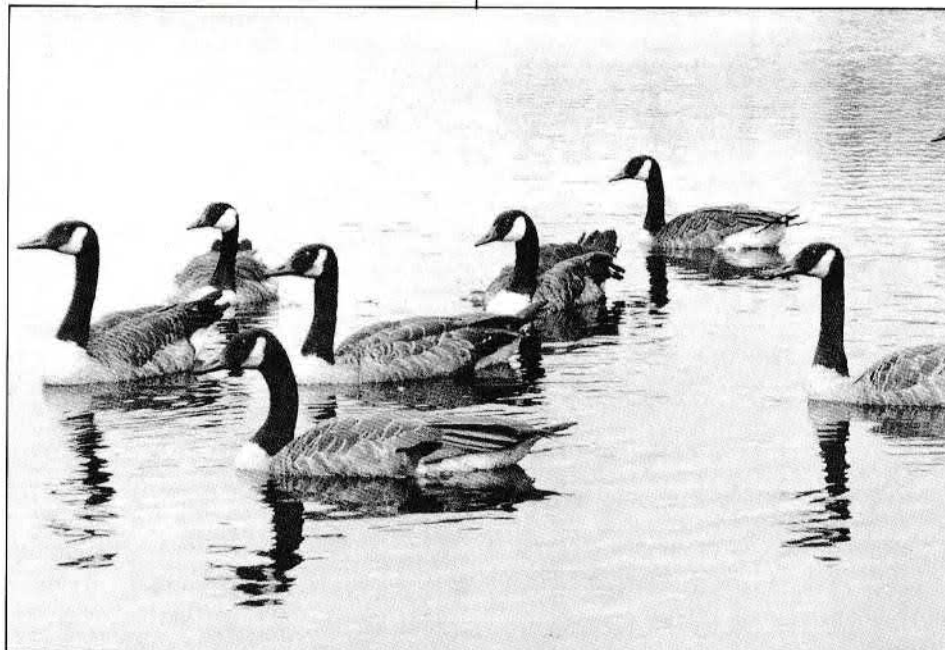


Ring Marie for a ticket to the Auckland dinner. (09) 686-772.

The Auckland Chapter is holding its annual dinner/auction on Friday March 30th starting at 7.30pm. This year the evening will be held at Sorrento, One Tree Hill. The ticket price is \$35.00 each which includes a full smorgasbord dinner and complimentary wine. All DU members and their friends are invited. For those wishing to attend the evening, tickets can be obtained from the DUAK Secretary, c/- 26B Rocklands Ave, Balmoral, Auckland. If anyone has any items suitable for the main or silent auction, these would be gratefully accepted. Collection can be arranged by ringing David Rice at (09) 299-8330 or Marie McEntee at (09) 686-772.

CANADA GEESE SIGHTING

The Miranda Naturalists' Trust has recently reported the sighting of a Canada Goose on the Firth of Thames. The last recorded sighting in this area was in the 1940's. Birds have also been seen recently on the Tuakau sewerage ponds.



Canada geese are increasing in the North Island.

WELLINGTON CHAPTER GARDEN PARTY

A successful and enjoyable day was held at 'Adze Hill', Jim and Doreen Glover's property at Pauahatani. Local craftspeople put on displays and some thirty people enjoyed themselves in the beautiful surroundings. \$500 was raised for D.U. at the function.

WELLINGTON CHAPTER DINNER AND SHOOT

The Fourth Wellington Chapter Dinner and Auction will be held at the James Cook Hotel on March 24 1990 at 7.30pm and the sporting day shoot will be at the Hutt Valley Gun Club on April 29 - a 9.30am start.

1990 ANNUAL MEETING

Don't forget that Diane Pritt is again co-ordinating bookings for this years annual meeting. Do make sure you get your bookings in early. You will find a registration form printed in this issue.

JIM CAMPBELL MARRIES



Jim and Raana shortly before their wedding day.

Congratulations to Jim and Raana who were married in mid January at Jim's farm near Masterton. As you will all know Jim has been a tower of strength in Ducks Unlimited for many years and all members will wish Jim and Raana all the very best for the future.

NEW ENVIRONMENTAL COMPANY ESTABLISHED

DU's good friend Dr Philip Tortell has now left the Department of Conservation and has established Environmental Management Ltd. Philip's new company will specialise in Environmental Impact Assessment, surveying of conservation projects, waste management, and overseas environmental aid projects. We wish Philip well in this new venture. He can now be contacted at P.O. Box 17391, Wellington. Phone (04) 769-276.

AVICULTURAL SEMINAR AT SLIMBRIDGE

The Wildfowl and Wetlands Trust has invited Ducks Unlimited members to participate in a one week Avicultural Seminar to be held in mid-June at their headquarters at Slimbridge in the UK. All aspects of waterfowl aviculture will be discussed and the programme looks like five very full days. The fee is £415, which will cover meals and accommodation. For further info please contact the DU Secretary.

OPERATION WHIO

The blue duck captive breeding season has not gone as well as we had hoped, but with some participants only receiving birds during the breeding season it probably went as well as could be expected. The National Wildlife Centre successfully reared two birds, as did the Otorohanga Zoo, and these birds will hopefully give us two more pairs before the next breeding

season. However, to really give the programme a boost it is going to be necessary for the Dept of Conservation to remove a small number of female blue ducks from the wild, as we now have three members in line for pairs. But don't forget we need lots more people to join both the brown teal and the blue duck captive breeding programmes.



Inside and outside of the Broadlands Wildfowl Trust's blue duck aviary.



OPERATION PATEKE

The brown teal breeding season has gone reasonably well and close to one hundred birds look like being reared. Initial reports indicate that the Otorohanga Zoo will win the Breeder of the Year Award, having reared 22 brown teal for the season. This is a record number for the Zoo and a great contribution to the recovery programme. In addition, Curator Eric Fox tells us that he has also reared two Auckland Island Teal - this being a world first for any private facility. Eric also reared two blue duck and has therefore set a fine example of what can be achieved.

Another release of captive reared brown teal is planned for mid-March and it is expected that around 60 birds will be released at Purerua, near Kerikeri, and a further 3 pairs onto Urupukapuka Island in the Bay of Islands.

OPERATION ROYAL SWAN

The breeding season saw a major boom in the Mute Swan recovery programme, with three members breeding swans on their ponds - 2, 2 & 1. With Lady Diana Isaac again very generously offering a good number of swans from Peacock Springs we should be in a position to distribute a healthy number of pairs to waiting members.

Project Supervisor, Jim Glover, was also busy recently, when he journeyed to Hawkes Bay to uplift a spare female swan from a non-project participant, and have this delivered - free of charge by Safe Air - to Lady Isaac in Christchurch. All-in-all great co-operation, which is bound to ensure the project's success.

Mrs S. Lindauer of Russell in the Bay of Islands has recently joined the brown teal captive breeding programme and it will be great to have a breeder right in the centre of the recovery area.

1990 POULTRY SEMINAR

**18th & 19th August
Taranaki Country Lodge,
New Plymouth**

Some of the topics to be covered:
A Guided Tour of Genetics, Breeding Programmes, Artificial Incubation, Nutrition, Rearing Healthy Chicks, Pheasant, Guinea, Quail and Duck Management, Keeping Wildlife Species. Speakers are professional men in their fields. Registrations close 15th June.

For further details please write to:

N.Z. Poultry & Game
Bird Publications
P.O. Box 5070, New Plymouth
Phone (067) 36617

Project Report

OPERATION WETLANDS

A number of new wetlands are currently being created in the Wairarapa, with Jim Campbell's bulldozer assisting at some sites. DU member Bud Jones, who has already created around 12 acres of water on his property near Eketahuna, is busy creating more lagoons and will end up with at least five lagoons, varying in size from 1½ acres to six acres. Bud has also fenced them all off and will have planted over 10,000 trees by the time he has completed the programme. In all around 30 acres of prime habitat will have been created.

Neil and Sylvia Hayes have recently purchased a block in the Wairarapa - a block which already has five acres of water on it (soon to be increased to at least eight acres - and 5 acres of magnificent native bush, which has over 40 standing Totara's).

In the Waikato Tony Flexman, on whose property 120 grey teal nest boxes have been erected, is busy creating more wetlands and DU will be making a financial contribution to assist with this work. Tony's property borders the very important Whangamarino Swamp and his support since 1975 is one of the main reasons why there has been such a tremendous increase in the grey teal population.

In the Horowhenua Brendan Coe has been continuing his impressive work in creating a superb wildlife habitat on his 64 acres. He has had at least 6 broods of wild scaup hatch, one brood of brown teal (hatched by the parent brown teal in a grey teal nest box - believed to be a world first!), lots of shoveler broods and large numbers of mallards. In addition two broods of NZ Dabchick's were also hatched in the wetlands, giving further proof of the vital



Attractive planting at the Broadlands Wildfowl Trust sets of the wetland.

importance of created habitat. Brendan has also been carrying out an extensive predator control programme, which is another reason for the success of the area.

Down in Dunedin, Horrie Sinclair has also been very active in the predator control area and since the 1st January (to 1.3.90) had

trapped, 9 stoats, 11 ferrets, 1 weasel and a number of hedgehogs. He reports that the 20 birds now resident on the captive waterfowl enclosure (shoveler, grey teal, grey ducks and Carolina's) have all settled in well. In addition he has a number of tame Pari's and mallards which flight in for the morning feed.

CHAPTER SALES ITEMS



AUCKLAND
Polo Shirt \$35
Grey Teal Nestboxes
\$20 (kitset)
plus freight
mounting post \$5 extra

I ENCLOSE MY CHEQUE FOR \$ IN PAYMENT
OR
PLEASE CHARGE TO MY VISA/BANKCARD
(Delete to suit)

CARD NO EXPIRY DATE

NAME (Please print)

ADDRESS

POST TO MARIE McINTEE, 26B ROCKLANDS AV.
BALMORAL, AUCKLAND
BUSINESS HOUSES: TAX INVOICE REQUIRED ☐ (Tick)

CHAPTER SALES ITEMS



EKETAHUNA
Hat \$15
Cloth Badge \$5



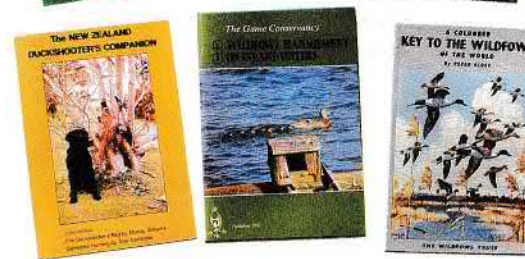
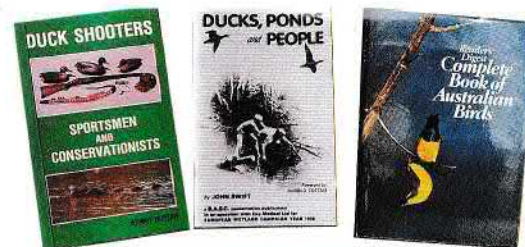
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NATIONAL SALES ITEMS

BOOKS

Duckshooters: Sportsman & Conservationists	\$20.00
Complete Book of Australian Birds (Readers Digest)	\$85.00
Coloured Key to the Waterfowl of the World	\$14.50
Ducks, Ponds and People	\$14.50
New Zealand Birds	\$11.30
The Duckshooter's Bag	\$8.00
The Duckshooter's Companion — Duckshooter's Bag & Gamebird Hunting	\$15.80
The Hawaiian Goose	\$25.50
The Mute Swan	\$51.00
Wildfowl Management on Inland Waters	\$21.50
Birds of New Zealand Locality Guide	\$50.00

VHS VIDEOS

River in Question — The Manganui-a-te-ao	\$66.50
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APPAREL

DU T-shirt — White (SM, XOS only)	\$14.00
DU Hat — Red/Fawn (one size fits all)	\$25.00
DU Jersey — Red/Green/Blue (state size)	\$68.50
DU Polo Shirt — Dark Blue	\$35.00

BADGES

DU Decal	\$ 1.20
DU Lapel Pin	\$ 5.60
DU Cloth Shoulder Patch	\$ 9.60
DU Canada 50th Anniversary Badge	\$ 5.60
DU Duck Head Badge — Large Gold	\$ 6.75
DU Duck Head Badge — Small Gold/White/Green	\$ 5.60
DU Duck Head Stick Pin	\$ 5.60

STATIONERY

DU Ballpoint Pens — per box of 10	\$11.20
DU Maxipens — per box of 10	\$11.20
DU Maxipens — single	\$ 1.50
Janet Marshall Bird Cards — set of four	\$ 6.00
Waterfowl Writing Paper and Envelopes — set of 10	\$ 9.00
Waterfowl Note Paper and Envelope — set of six	\$ 6.00
Mallard/Canada Card — For framing	\$ 6.00
Postcards — Mute Swan/Brown Teal 10 Pack	\$ 4.00

GENERAL

Janet Marshall Print signed, Russell Jackson Print signed	\$85.00 EA
Canada Goose Place Mats — set of six	\$28.60
Canada Goose Coasters — set of six	\$11.65
Mallard Duck Coasters — set of six	\$11.65
Fenn Traps Mk 6	\$28.00
DU Duck Head Flag 62cm X 44cm	\$41.00
DU Cam-o-paint	\$10.00
DU Ashtray	\$ 4.60
DU Bottle Opener	\$ 4.20
DU Key Ring	\$ 4.60
DU Key Ring Nail Clippers	\$ 4.20
DU Letter Opener	\$ 4.20
DU Tea Caddy Spoon	\$ 4.20
DU Teaspoons	\$ 4.20
Number Plate Surrounds (Pairs) Red, Blue, Green	\$33.00
Engraved Crystal Wine Glasses (Set of 6)	\$75.00
Engraved Crystal Whisky Glasses (Set of 6)	\$75.00
Engraved Crystal Decanter	\$50.00
Roll Bag	\$24.00
Camo Pack	\$36.00

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