

Flight

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2001

ISSUE 107



DUCKS UNLIMITED NEW ZEALAND INC.

For Wetlands and Waterfowl.



27th Annual Conference

Copthorne Resort Solway Park, Masterton, 20-22 July 2001

Rooms have yet to be booked for the Friday and Saturday nights so it would be helpful if members would show an expression of interest as soon as possible so we can advise the hotel.

Full Registration

Includes AGM attendance, morning teas, wetland tour, lunch and wine tasting, trip to the National Wildlife Centre to see the kaka fed, Saturday night dinner and auction (excluding \$5 per head bus and Mt. Bruce entrance fee): \$75 per person.

Saturday night dinner and auction only: \$35 per person.

Wetland tour: \$5 per person. Room deposit: \$50

Send your registration to: _____

P.O. Box 9795, Newmarket, Auckland. Conference inquiries: Ross Cottle (06)378 7408

2001 Annual Conference Programme

Friday 20 July:

Evening get-together, after arrival, the Palliser Room from 7pm.

Saturday 21 July:

9am: Registration and AGM

10.30am: Wetland tour departs, returning to the Copthorne approximately 4.30pm.

7pm: Pre-dinner drinks

8pm: Dinner, followed by auction.

Sunday 22 July:

Showing of the Banrock Station video.

Need a Ride to This Year's Annual Conference?

The Waikato chapter is considering taking a bus to Masterton for this year's Annual Conference.

A great weekend with a group of wetland-loving enthusiasts is promised.

To help gauge the demand for a bus, contact (07)889 3346.

Can you help?

Stoney Oaks Wildlife Park

would like to buy for their new wetland:

A pair of shoveler, scaup, grey teal or any other native species of waterfowl.

Contact (06)756 7624

Wanted

Auckland Zoo requires a male paradise shelduck.

Contact curator Glen Holland a/h (09)360 6515



Paul Martinson

INSIGHT

Craig Worth

President

My old man walked into my office the other day, telling me how many grey teal used his nest boxes. And then he proceeded to tell me exactly how many days we had to go before the opening of the duck shooting season. I thought to myself, how has he got enough time to work that out when I'm struggling to work out what I'm going to do in the next hour (ah, pensioners - all the time in the world.) However, he prompted me to have a look to see what is coming up in the not too distant future.

The Board has recently employed Sandra Pipes on a part time basis to assist our able Treasurer with all aspects relating to membership and AGM registrations. Subscription renewals will be out shortly and, as a past Treasurer, I know it would make things considerably easier if all members made an effort and renewed their subscriptions as quickly as possible.

Former Director/Treasurer Glenys Hanson, who is famous for her jams and preserves, has agreed to assist Ross Cottle with the forthcoming national raffle. The raffle, like all of our fundraising events, contributes significantly to the work this organisation is doing around the country. With projects like Waikare, it is likely that DUNZ is going to require all the resources it can generate in this financial year.

You will read in this issue of Ron Coley's visit. He was very interesting and extremely knowledgeable. However, it might be just as well that he has gone back to Canada, as he had insisted that I help him sample as many different New Zealand beers and wines as possible and I don't know if my liver would have held out another week at that pace.

David Wilks recently agreed to join the Board and his main responsibilities will be for public relations and publicity. There is some background on David on page 5. It is great to have him on board. With DU becoming every day more involved with wetlands and high profile projects, public relations is an area in which the Board felt we could significantly improve.



CONTENTS

Special Features

Solving Problems at Lake Ngaroto
by Murray Dench 6

Lake Waikare
by David Smith 8

Wetland Health: Botulism
by Grahame Powell 8

Lake Care Whangape
by George Blair 9

Bringing People and Wildlife Together: Stoney Oaks Wildlife Park 10

Gretel Lagoons
by Neil Hayes 11

The Golden Plover Award 2000 12

Regular Features

Our People 4

DU News 5

Conservation on the Net 13

&... Brief items on environment issues 14

Flight Ecofile 15

OUR MISSION

We are a voluntary membership-based society dedicated to the conservation of New Zealand wetlands through:

- wetland restoration and development;
- conservation programmes for threatened waterfowl;
- advocacy and education of wetland values.

By these means we seek to ensure the ethical and sustainable use of wetland resources by all existing and future users.

Cover Photo: Grace and Favour and cygnets, Stoney Oaks Wildlife Park. Photo: Gail Simons.

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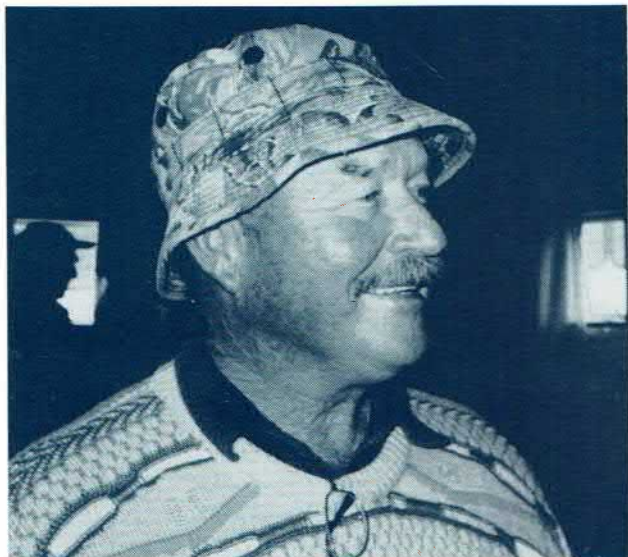
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OUR People



Grahame Powell

A member for nearly nine years, Grahame was born in Auckland and educated at Mt. Albert Grammar and Auckland and Sydney Universities. After completing a veterinary degree he began practising in Warkworth then moved to Wellsford as Senior Vet and later into private practice.

An Honorary Ranger for nearly 20 years, he wanted to have hunters earn the respect of landowners on whom they depend for their sport. He is a JP and a Rodney District Councillor. Through his local government involvement he keeps an eye on proposed developments and is seeking re-election this year.

Married to Jenny, Grahame retired from his veterinary practice in 1994 and is now farming. He has created two ponds on the property just for waterfowl. Among his wide interests and community involvements are hunting, fishing, clay target shooting, and the preservation of waterfowl and upland game habitat. Grahame says, "It's hard to fit everything in these days."



Keith and Jackie Levy

Wetlands and waterfowl are an enjoyable involvement for DU members Keith and Jackie Levy who have developed a 2ha garden from a paddock near Masterton over the last eight years and added a small wetland (*see below*).

Jackie was born in Lower Hutt and educated at Naenae College, Keith in Takapuna where he attended Grammar School and then went to Victoria University. Jackie was a potter in her spare time while their now adult son and two daughters were growing up. She managed the former Wairarapa Art Centre's craft shop for several years. She has loved the challenge of designing a garden on their property and works in it many hours each week.

Keith has been a chartered accountant and is now a financial planner and adviser with Spicers Portfolio Management Ltd. His most important client is of course the NZ Waterfowl and Wetlands Trust. His interests are tramping, gardening and photography.

The Eastcroft Wetland

By Keith and Jackie Levy

On our Wairarapa property near Masterton is a low area where the water would lie in winter, even though it was drained with field tiles. We discussed with Jim Campbell and Ross Cottle the possibility of creating a small wetland and both agreed it was feasible. We had a great deal of encouragement from "those two from DU" and Ross signed us up as members.

No sooner had we agreed to go ahead than contractor Garry Thomson and Jim arrived with all the necessary equipment to break havoc on our land! Soon the excavation was done, the island built, mounding completed and we were thrilled to see water was filling the pond from a small spring and a high water table.

We planted extensively with natives, using grasses, and species like cordylines, toe toe and olearia. The rest was left to nature.

That was April, nearly two years ago, and the following spring a pair of pied stilts nested and raised four chicks. We borrowed a hide so we could watch the birds feed and develop. It was disappointing they didn't return last spring, even though we cleared an area on the island and spread gravel where they had nested before.

The pond is only about 50 metres long but we have a spring-fed stream right beside it that is home to a pair of pekin ducks. The stream has plenty of natural feed but the pekings still appear on the



Section of the Levys' Eastcroft wetland featuring grasses & bridge.

pond at feeding time. We have mallards and shovelers on both stream and pond and a number of pairs have bred.

Jim and Garry did a wonderful job in forming and landscaping the total area and about 14 months ago we built a bridge across a narrow section of the pond to provide another access point and provide visual enhancement.





New Director Joins Board

David Wilks was co-opted to the Board of DUNZ at its last meeting in February and took up his position at the end of March. A member of DU for over 14 years, David was closely involved with William Abel in the launch of Wetland Care NZ and fronted for DU at the Shandon Golf Club World Wetlands Day event in February (see page 6).



David brings valuable skills to the Board, with an Agricultural Science Degree with a major in Marketing. He has worked for Colgate, Wrightson, NZ company Gallagher while overseas, and is currently General Manager, Marketing, with the TAB.

The appointment creates what is believed to be a first for DU, with David joining his father Alan on the Board as a Director.



The new Director following in father's footsteps at an earlier age.

Mana Island Brown Teal

Despite the death of the one brown teal duckling that hatched this season, the 10 birds released on Mana Island are thriving. From early January conditions were very dry on the island with a high fire risk and water was being pumped to provide some moisture in the wetland to keep the waterfowl on the island.

Brown Teal at Karori Sanctuary

The four pairs of brown teal from DU's captive breeding programme, which were released on November 3 last year, are doing well. A control structure has been built with the money from Wetland Care New Zealand, which came from Banrock Station Wines, and has flooded a new area specifically for the brown teal.

Waikato Chapter

Flight readers will know that Ron Coley was brought to New Zealand by DUNZ to assist in the preparation of evidence to be presented in a forthcoming case before the Environment Court. DU is contesting an Environment Waikato resource consent application which it feels would allow the continued destruction of Lake Waikare.

The Waikato Chapter pleaded with the Board of DU to let us borrow Ron for a day to meet with the Waipa District Council and visit Lake Ngaroto to give his recommendations on the best way to design a management system to control the level of this lake for which a resource consent application is currently being prepared.

While we had Ron we offered him bribes of beer and cookies to induce him to give a presentation on DU Canada to local chapter members and friends in the evening. To this, of course, he readily agreed.

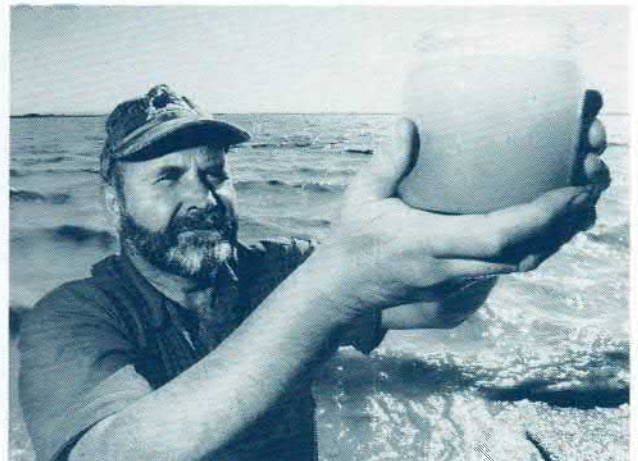
The day's visit and the evening meeting were a last minute thing because of the uncertainties of Ron's and Waipa District Council's timetables.

We rang around and made contact with as many members as possible and 19 were able to attend. Apologies are offered to those we couldn't contact or who had other commitments because of the late notice and could not attend.

Ron has recently retired from Ducks Unlimited Canada after more than 30 years - the last 27 as their Chief Engineer. He is now an international consultant in wetland habitat creation, preservation, and management. While with DU Canada he had 14 engineers working under him and they in turn had a team of technicians under them, and all this was just for wetland habitat creation.

DU Canada's annual budget is around C\$75 million. Twenty-five million comes from DU Canada fundraising events, just like our auctions, \$25 million from DU (Inc.) and, although it's hard to believe, \$25 million from the American government from a fund into which all hunting and fishing fines are paid. It is almost unheard of for a government of one country to give money to a private organisation in another country for environmental works. It gives an indication of the high regard in which Ducks Unlimited is held over there.

DU Canada has a presence in every Canadian state and in some there are regional offices as well. Ron's home base is Winnipeg, in Manitoba,



Ron Coley examines a water sample from Lake Waikare during his visit to troubled wetlands in the Waikato. Photo: Jeff Brass/Waikato Times.

which is also the head office of DU Canada. David Smith's article in the January issue of Flight includes a photo of the wetland at the headquarters which is enough to make your mouth water.

DU Canada's budget for research and development into wetland habitats would keep us going for years. They know, for example, how big a wader pond should be, what slope is best for the bottom, what shape it should be, how deep, the whole works. Everything they do is geared to achieving maximum waterfowl production. In one classic experiment they set up 10 cells of 5ha marshes and managed each one differently to find the optimum conditions for waterfowl production. This experiment has been published and it sounds like the bible of wetland habitat creation and enhancement. We can't wait to get our hands on a copy.

Ron gave a brief rundown of the Lake Waikare situation. In a nutshell he suggests it is nearly beyond recovery. It would be possible to save the lake but it would be expensive and very long term. He suggests that the effort at the moment would be best aimed at stopping the decline of the Whangamarino wetland.

He was particularly critical of the mass of silt which is being deposited into both Lake Waikare and the Whangamarino. He had evaluated the inflowing streams right up to their sources and was disturbed by the amount of slipping, surface erosion, cattle tracking, and stream bank erosion which was causing the severe siltation and nutrient enrichment of the receiving waters. Buffer strips are urgently needed in this area together with some retirement of the very steep headwaters.

That a RAMSAR wetland like the Whangamarino could be allowed to decline to such an extent was something Ron found appalling. (A RAMSAR site is one which the international community has declared to be of international importance and the government is charged with maintaining it in good condition on behalf of the rest of the world). Ron pointed out that the international community is able to "red list" a RAMSAR site. This means that the government concerned has failed to protect an internationally important site to the required standard. If that happened here, New Zealand's Clean Green marketing image overseas would be shot to bits!

After his presentation Ron answered many questions covering a variety of topics and his wide knowledge and expertise were very much in evidence. Most of us were disappointed when the evening had to end.

After the meeting the Waikato Chapter had a whip around and donated a Waikato Chapter and DUNZ membership to Ron to show our appreciation of his efforts.

Field Days

DU has been invited by Taupo Native Plant Nursery to staff a wetland area at the forthcoming Field Days at Mystery Creek. Some help will be needed and any members who intend being at the Field Days and who could spare a few hours, are invited to contact the Waikato Chapter for placement on a roster. Helpers will be well briefed to handle questions and the event will be an opportunity to promote the value of wetlands and the need to halt their decline. Contact Michelle McKay (07)889 3346.

Video Night

The best of a large library of videos about the growth of DU America will be shown at an evening in Hamilton on 1 May, at 7pm at Craig Worth's home. The videos tell the story of how DU has grown to be the huge organisation it is today in America. For further information contact Craig Worth (07)854 0494.

Annual Conference 2002

The Waikato Chapter will be hosting the 2002 Annual Conference in Hamilton and is planning to make it the best conference ever. Ideas on what the Chapter can do or provide to make it a winner are needed. Members who have been to conferences elsewhere which had features they particularly enjoyed are welcome to suggest these to the conference organisers. Offers of assistance with the weekend's events will be welcomed. If you have suggestions or would like to help, contact Chapter President Ray Hayward (07)855 2205 or Chapter Secretary Michelle McKay (07)889 3346.

World Wetlands Day at Shandon Golf Club

The small but very successful wetland DU developed at Shandon in association with the Shandon Golf Club has been used this year by the Wellington Regional Council to showcase World Wetlands Day in the region. A planting day was held on the development with the council donating \$1,000 worth of wetland plants and the manpower to plant them. In addition, it has also funded a yet-to-be installed flap gate for the wetland intake. As the water level is governed by a tidal creek, a non-return valve will enable the club to flush the wetland and maintain a regular level throughout the year.

This has proved to be a most successful liaison. Wetland Care NZ received publicity for the original initiative in two local newspapers, new Director David Wilks spoke on behalf of Wetland Care NZ at the formal part of the day, the Regional Council has tripled DU's original investment in the wetland and Shandon Golf Club have an even more appealing wetland that about 100,000 people a year walk past and around while playing golf.

Longtime DU member and supporter, and a retired wildlife scientist, Tom Caithness pointed out that in his 40-year association with the golf club he had never seen a pukeko there (despite the proximity to the Hutt River) until we created the wetland. Now, pukeko are regular visitors along with herons, stilts and, of course, ducks.

Solving Problems at LAKE NGAROTO

*... it quickly became clear
that there are ways of
managing the water level
that could meet the
needs of
all affected parties ...*

The Waikato Chapter of DU managed to engage the services of Ron Coley for a day and involve him in discussions on the management of Lake Ngaroto. Murray Dench reports on the day's discussions...

In 1970 a resource consent was issued to allow the level of Lake Ngaroto to be raised during summer to allow yachting and rowing, then lowered again in winter to provide buffer storage of rainwater runoff from surrounding farm land. The consent was renewed without change in 1984.

The unnatural cycle of high water levels in summer and low levels in winter has now been identified by DOC, Environment Waikato, Waipa District Council and concerned residents as having a major negative impact on the lake's ecology.

The current resource consent expired in 1995 and the large number of objections to a new consent being issued at that time stalled the process. Agreement could not be reached on an interim short-term consent to allow for a "lake level setting exercise" to take place. A new application is now being prepared for the consent renewal but it has been a difficult task because of the wide variety of conflicting interests and no one had the answers.

Members of the Waikato DU Chapter met

with the Waipa District Council Manager on Wednesday 31 January before Ron Coley arrived. The manager is preparing the resource consent application and we were not

happy to hear that his feeling was that political pressure from the farming sector would be too great to allow much change to the expired consent.



Lake Ngaroto before restoration work began. Photo courtesy Murray Dench.

... Ron's input will have far-reaching benefits for both Lake Ngaroto and other wetland projects which the Waipa District Council intends to start in future . . .

When Ron Coley arrived there was a visit to the lake. During the walk around the lake, Ron made a number of suggestions. These included avoiding planting too many manuka, which stifle growth, and allowing limited stock grazing of the reserve. While there was some initial shock at these suggestions, his explanations proved they had merit.

Discussions on the options for lake level control while we stood on the walkway bridge over the outlet drain were the high point of the exercise. Ron put forward a number of scenarios and it quickly became clear that there are ways of managing the water level that could meet the needs of all affected parties. These could assist in the recovery of a severely polluted lake, although users like yachties and rowers would be disadvantaged once in every seven years or so.

At the wind-up meeting at the end of the day, the Waipa District Council staff who had seemed so sceptical in the morning were quite enthusiastic and ready to add some of Ron's ideas to the resource consent application. There is no question that Ron's input will have far-reaching benefits for both Lake Ngaroto and other wetland projects which the Waipa District Council intends to start in future. DU Waikato Chapter received personal thanks from the Waipa District Council staff for

making the visit possible and for the invitations to attend.

The exercise was an opportunity to promote DUNZ, distribute copies of Flight and explain Wetland Care NZ. The relationship with DU(Inc.) and DU Canada was explained and DU offered its services as a conduit of waterfowl and wetland engineering information from those sources. The offer has already been taken up and Ron was given a wish-list of information he has undertaken to assemble and provide to DU for distribution.

It remains to be seen whether the new lake level resource consent will be in the favour of

wetlands and waterfowl or not, but any battles we have to fight from now on will be a lot easier thanks to Ron's input. The Chapter is pleased DU arranged for Ron to come to New Zealand and grateful he could be released for a day to help sort out problems in its area.



Lake Ngaroto after planting around the lake edge. Photo courtesy Murray Dench.



Letter to the Editor

Dear Editor,

It was good to see the information on Paul Martinson, brief as it was, in the last issue of Flight. I would like to add to it by pointing out that Paul has received far greater recognition than alluded to in the article.

Besides his wonderful exhibitions, the following are just a few of the highlights of his exceptional art career:

1990: He was New Zealand Wildlife Artist of the Year and thus gained international recognition.

1991: The books, *Paul Martinson's New Zealand Birds* and *New Zealand's Extinct Birds*, were published.

1992: Feature article in *Wildlife USA*, May/June : *New Zealand Birds Past and Present*, the Art of Paul Martinson.

1993: Featured article in *Birds of the Wild USA*, Autumn 1993. *New Zealand's Endangered Birds*, an interview with artist Paul Martinson by Robert H. Jones.

Selected private collections holding Paul's work include Lady Diana Isaac, the Assistant US Attorney General and Her Majesty Queen Margarethe of Denmark.

I also know that Paul's art has brought pleasure to the homes of



Paul Martinson

several DU members. Ferner Galleries of Auckland and Wellington are his agents and donations from them have contributed to the silent auction tables in Palmerston North, Taupo and Hamilton.

Ossie Latham

Correspondence and comment from readers on any topic in Flight is always sought and welcomed. Thank you for

enlarging on Paul Martinson's impressive list of achievements which, like his fine wildlife illustrations that grace Flight, underscore his stature as an artist. The Our People profiles are only the briefest summaries of information supplied by members who, like Paul, make a huge and unsung contribution to conservation and rarely mention their modesty! - Ed.

LAKE WAIKARE

Ducks Unlimited's battle to save Lake Waikare continues. On 2 March 2001 there was to be a callover in the Environment Court in Hamilton and it was hoped that at that time a hearing date would be obtained. In the meantime, the Board's efforts have been directed towards obtaining the necessary evidence to present to the court to support our position. Director David Smith Reports . . .

In late January, Ron Coley, who has been Chief Engineer for Ducks Unlimited Canada, came to inspect the lake and to gather information for a report which will form the basis of the brief of evidence to the court.

Ron's visit lasted a week and was a busy time for those involved. He was given a thorough tour of the lake and also the Whangamarino Swamp, the structures which are in place to which the water rights being sought apply and the surrounding countryside. Samples of the water in the lake were taken, as were samples in the feeder streams, to identify the source of the silt which is pouring into the lake at the rate of 35,000 tonnes a year.

Ron, together with the writer, visited Environment Waikato and met with two of their engineers to see what information they were able to provide that may assist in creating a workable solution for all parties concerned. A certain amount of information was sought and to date this has not been received. This

will be followed up by way of a formal written request for information to enable water levels between the lake and the Waikato River, and similar data, to be checked and assessed.

The problems with Lake Waikare appear to be twofold. First, there is the obvious problem with siltation. This has been continuing for some time and is evident in photographs as early as 1943. It is also clear from the photographs taken over a period of time that the amount of silt has been increasing continually as the head waters have been cleared of bush.

In 1965, the control structures were put into operation and the level of the lake was lowered. The volume of water in the lake was reduced to some 64% of its original volume. That nearly doubled the concentration of silt in the lake. Any plants which may have been alive at that time have long since died, presumably from lack of light if nothing else.

The regime of maintaining the lake at the new level since 1965 has meant that the natural flooding and drying process taking place in the margins of the lake ceased. It is estimated that the lake margins would have supported most of the birds that were recorded on the lake prior to 1965. Not long after that, when the control structures came into effect, the population collapsed. With the level of the lake fluctuating very little, the margin land is similarly very little and nothing compared to what it used to be.

The second problem is that the current lake restricts water flow into the Waikato River to about one month a year (in total). All the flow goes through the Whangamarino Swamp with the silt being deposited in that swamp as it goes. Notwithstanding that the particles of earth which make up the silt are very small and take a long time to precipitate out, there

The Whangamarino is a Ramsar site and has, by treaty executed by the New Zealand Government, been deemed to be a place of ecological importance and to be protected.

is still additional silt, unnecessarily, being added to what is one of the remaining big wetlands of New Zealand.

No steps are being taken by the Department of Conservation, on behalf of the Government, to reverse this procedure. To be fair, though, DOC has objected to the consents, but whether for lack of money or other reasons, it has not to date done anything actively in relation to the Whangamarino Swamp. Ron Coley was horrified to see the way in which the Whangamarino is starting to be closed in by willows. The wetland habitat for ducks in particular is greatly diminished in this area.

While Ron was with us, he assisted DU's efforts in tackling the problem at Lake Ngaroto which has been a source of concern for local members as the bird population has dropped on that lake also. The reception by Waipa District Council of Ron's visit was enthusiastic and it is hoped that there will be an improved management regime on that lake which will have a direct benefit for the waterfowl.

Ron is forwarding to the Board formal reports on both Lake Ngaroto and Lake Waikare for assessment shortly. The Board will consider Ron's reports and hopefully be in a position to advise in the next Flight as to the hearing date and our suggestions as to how the problem can best be handled.

WETLAND HEALTH **Botulism**

Breeders of waterfowl and wetland owners will, hopefully, never have to deal with botulism. But here is guidance in detecting and avoiding the disease . . .

I am more used to observing ducks from the point of view of a hunter than as a vet. However, I was called one hot day to a property where a large number of domestic ducks were kept for egg and meat production. The ducks were dying in numbers.

Several of the birds still alive were showing abnormal behaviour. They were unable to hold their heads up and had little control of their legs or wings and were swimming around with their heads under the water until they drowned or

were rescued. This seemed very strange. Post mortems revealed no obvious cause for the ducks' distress but laboratory analysis detected the toxin of *Clostridium botulinum*, resulting in a diagnosis of botulism. At that time, botulism was rarely reported and this was a first for me.

Propagation of *C. botulinum* occurs in carcasses and dirty water and, on occasions, in oxidation ponds. It is associated with the formation of a toxin which causes progressive paralysis in waterfowl and game birds.

Clinical signs include drooping of the wings, partial leg paralysis and paralysis, raising of the head hackles, limp neck, mucus and other matter coming from the mouth because of an inability to swallow, and swelling and closing of the eyelids.

A tentative diagnosis can be made on the paralysis signs, presence of maggots and unhygienic water conditions, e.g., stagnant ponds, rotting carcasses and rotting plant material.

In recent years severe outbreaks of botulism resulting in many deaths have occurred in

very dry seasons where large numbers of wild ducks have congregated on the Mangere oxidation ponds near Auckland.

It is important not to allow contamination of your wetlands, particularly in times of low water flows. Treatment of sick birds involves removing them from the at-risk environment and possibly the use of antitoxin.

- Grahame Powell

An estimated 8,000 water birds, including as many as 1,000 common loons, were killed in an outbreak of botulism along Lake Erie bordering Canada and the US in December 2000. Crews from the State Department of Environmental Conservation combed sections of a roughly 60-mile stretch of lake shore from Dunkirk north to Buffalo retrieving thousands of dead grebes, common and red-breasted mergansers, loons, diving ducks, ring-billed gulls and herring gulls. Since August 2000, birds have died of botulism in Great Lakes states like Michigan and Pennsylvania and in other places including Hawaii, California, Louisiana and Vermont.



The Water Regime

Water regime describes the presence or absence of water in a wetland, flooding and drying and the frequency, extent and duration of both.

It directly affects the plant and wildlife species and the longterm nature and viability of the habitat. Understanding the present, or even past, water regime of a wetland may provide clues to the composition of species and remedial measures which may be needed if it is under stress or threat.

Flooding dampens the soil, stimulates seed

germination and reproduction of animal life. Drying allows seeds to germinate in exposed mud and the wetland is colonised by species able to use nutrients released by dead aquatic organisms.

Particular regimes favour certain species. Habitats change as water levels change, and alternate wet and dry periods encourage diversity in plant and animal populations.

Rapid, uncontrolled flooding or drying stresses the plant and wildlife populations. Artificially or permanently flooded wetlands may not give plants important seasonal cues for growth and reproduction and lead to dominance by a few

species. Too dry a wetland can reduce the diversity of wetland plants present.

Different plant species require different frequency of flooding and drying, and different water regimes will stimulate various plant communities.

If the effects of water regime in a wetland are understood, what is there can be accepted or changed by altering the regime.

[Adapted from M.A. Brock et al. *Does Your Wetland Flood and Dry? Water Regime and Wetland Plants. Land and Water Resources Research and Development Corporation. Canberra. 2000. ISBN 0 642 76042 X.*]

South Island Whio

A productivity and survival study into whio began late last year in the Clinton and Arthur Catchments (Milford Track). This study has already provided some interesting information. Video cameras were being placed on nests throughout the summer. By last December, two of the

three videoed nests had been visited by stoats and one also by a possum. A stoat destroyed one of the nests and the female survived, while the other female managed to defend her nest from a stoat and a possum, although the stoat stole one egg.

A third female was thought to have just begun incubating when she was killed. She was found pulled under a rock with stoat scats surrounding her.

The sex imbalance, particularly in the Clinton Study site, is also concerning, containing 14 males (2 male/male pairs) and now, only 2 females. This alarming evidence of the

impact of stoats on who is more serious than expected. The impact has probably been worsened because of last year's mild winter but the sex imbalance suggests that this has been an ongoing problem.

A stoat trap line was set up in the Clinton Catchment and this was hoped to provide protection, not only to kaka and mohua but also whio and kiwi during 2001.

[Adapted from *Rare Bits, No.39, December 2000. Department of Conservation.*]

Lake Care Whangape

Lake Whangape to the west of Huntly covers some 1450ha as a shallow lake. It follows a marked seasonal cycle closely related to the levels of the Waikato River. Up to the 1870s, the lake supported diverse shoreline and wetland communities. Since then, development has seen modification of the wetland and lake margin flora and fauna through drainage and introduction of exotic crack and grey willow. Remaining areas have been grazed and invaded by other exotic plants. Raupo has almost completely disappeared. Lake Whangape Care Group Co-ordinator George Blair outlines efforts to preserve and restore this important wetland....

The reserve's value as a representative example of a natural ecosystem is limited because it has been disturbed and has a high proportion of exotic species. However, of all the Lower Waikato lakes, Whangape has the highest wildlife values and is the least affected by catchment development.

The rich bird life in the reserve includes native species like grey duck, New Zealand shoveler and grey teal. Others present include paradise duck, brown teal, banded rail, spotless crane, marsh crane, fernbird, Australasian bittern, New Zealand scaup, little black shag, black shag, pied stilt, white faced heron, spur-winged plover, grey warbler, fantail, silvereye, shining cuckoo, kereru, tui, Australian coot

Wetland Care New Zealand

Wetland Care New Zealand's mission is to: harness community, business and government resources to restore and develop lost wetland areas within New Zealand.

Funding

Funding for projects comes mainly from the Waterfowl and Wetlands Trust that was established 12 years ago and has underwritten significant levels of wetland development projects. Additional resources have come through fundraising and corporate sponsorships like that from Banrock Station Wines. Wetland Care New Zealand actively seeks funding from private and public sources for its work.

Partnerships

Central to Wetland Care New Zealand's mission is forming partnerships with people with common aims. Alliances are being established with conservation groups like DOC, NZ Fish and Game, Forest & Bird and regional councils.

Taking Care of Wetlands

Wetland Care New Zealand's current and completed solo and partnership projects include:

Ashurst Domain Project - Manawatu
Camm Brown Teal Wetland Project - Northland
Home Lagoon - Wairarapa

Karori Sanctuary Wetland Development - Wellington

Magill Wetland - SH1 Reporoa

Mana Island Brown Teal Wetland - Kapiti

Pearce Wetlands - Wairarapa

Sinclair Wetlands - Otago

Further Information

Please contact:

William Abel

Director Wetland Care New Zealand

(04)478 4335



and welcome swallow.

Features of Lake Whangape identified as being of important conservation value include its being a habitat for wetland birds whose numbers have been reduced in New Zealand through habitat destruction. It supports large breeding populations of game bird species. The nearby Awaroa Swamp is the only known North Island moulting ground for the indigenous shoveler, and the lake is the only moulting site for the regional population of paradise duck. It is one of three confirmed nesting sites in New Zealand for the little black shag, and an important pre- and post-natal staging area for dabbling ducks. The marginal areas of the lake support *Amphibromus fluitans*, an endangered plant. A large stock of eels and diverse fish fauna is supported by the lake which also includes the rare and endangered black mud fish.

My family has been in the area since the 1920s and we have seen many changes in the lake shoreline, water quality, and plant and wildfowl species. There has been increased use made of the lake by hunters, fishers and people wanting to get away from it all.

In 1998 I formed the Lake Care Group. Fencing and planting around the lake edge has been carried out to provide habitat and food for fish and birds, and to stop erosion. This has created a buffer zone between farmland and the lake margins and acts as a nutrient trap for fertiliser and animal waste. As an added bonus, the plantings will beautify the lake edge in future years.

Over 1998-99, some six kilometres of fencing was erected around Whangape and adjacent lakes with landowners meeting the costs, and

Fish & Game clubs (Huntly and Hamilton) providing trees and labour. In the winter of 1999, fencing was done on three properties and 1,800 trees were planted. Fish & Game provided \$2,000 for materials and also more trees and labour. Many hours of free time were given to a very worthwhile project.

A major problem affecting Whangape is silting, especially via the major stream which flows into the lake, the Awaroa Stream. This has recently been cleared after farmer protest about flooding. Our next major project may be to see what can be done to reduce the amount of silt in the stream.

Water levels are an ongoing issue. The summer water level was too low because illegal earthworks breached the natural barrier and allowed the lake to drain. Low water levels affect water quality, plant populations and species and allow the lake margins to become muddy. In the summer of 1998 a new still was installed and there was a good level of water in the lake in the summer of 1999.

The year 2000 was to be the year to fence off, and over seven kilometres of fencing were completed and another 5,000 trees planted. The work was done by my hard-core group of Huntly Fish & Game members and landowners. However, with prizes donated by Allan Hammond Game Calls, Otago, Swazi Apparel, Levin, and Sportsways Hunting and Fishing, Hamilton, some carrots were able to be provided to get the holes dug and more trees planted.

Funding for fencing material has come from Forest & Bird (\$1,000), Environment Waikato (\$5,600), and DU (\$1,800). The materials were purchased at Wrightson of Huntly.

Trees have been supplied by DOC (500 natives), Fish & Game (1,400 oaks and other species, and 1,500 natives), and Specialised Excavations and Bob Sharp Contractors (1,600). The latter companies provided machinery and labour to dig out some wild sown oak trees on properties backing on to Lakes Whangape, Rotongaro, Rotongariti and Waikare. Fish & Game have provided \$1,500 to start a nursery for trees which will be required in the future.

In 2001 we will, as a group, be mainly looking at planting more trees in fenced off areas. We would welcome any trees, especially natives like flax, cabbage trees and anything suitable for wetlands.

Much effort has gone into pest and predator control. Forest & Bird have provided \$300 for possum bait - campaign and talon in K.K. stations. After two years, the possum control programme is starting to show results. One night of spotlighting in which no possums were seen suggests that they are under control.

A major predator is wild cats. My father told me that the skylarks disappeared due to wild cat predation during the 1998 flood. I trapped 400ha backing on to swamp land which was flooded and caught over 40 wild cats. My trapping has continued and expanded into other properties and we now see skylarks again. Cats are the biggest threat to New Zealand bird life and we should advocate cats becoming illegal as pets or for them to be microchipped and bird belled.

The foregoing outlines what the Lake Whangape Care Group is doing. Only the future will show the results

Bringing People and Wildlife Together:

Stoney Oaks Wildlife Park

A wetland-plus, where people and hand-reared animals can interact, is the vision behind Stoney Oaks Wildlife Park, as Gail Simons explained to Flight...

Stoney Oaks is a 20ha property near Inglewood in Taranaki where Gail Simons and her husband Trevor have lived for the last 10 years in a 100-year-old homestead they have renovated themselves.

Everything has been planned to bring people and animals together. Visitors can see a range of waterfowl on a developing wetland and have hands-on contact with all sorts of animals: black and white Jacob sheep; kune kune pigs; a European wild pig, Pee Wee; Nubian goats; an alpaca; a Tibetan yak; you name it and it's probably there.

The property has a river running through it and a stand of mature oak trees. The first time Gail and Trevor saw it they were struck by its character and thought it would make a wonderful wildlife park. When they had the opportunity to buy it, they started from nothing, building pens, the aviary, a pond, and fences and undertaking extensive stone work.

They fenced off a stand of native bush when they bought the property and the regrowth has been fantastic. With a bush walk created, and

small bridges over the creeks, it is an enjoyable experience for people of all ages.

One of Gail's passions is Scottish Highland cattle. She bred "McGillie", the Taranaki rugby team mascot, who started life as a little ball of white fluff and now weighs in at 850kg.

She tells a delightful story of helping Trevor early one morning to shift some deer while still in her nightie. One of the hinds broke back and came straight for her. The only thing she could think to do was lift her nightie above her head. The deer came to a skidding halt when it saw this headless naked figure, then trotted quietly back to the herd. Trevor claims the hind is still having counselling. As the paddock was beside the road it was just as well

there were no passing cars or Gail could have been had up as a traffic hazard.

They are currently developing a wetland with a boardwalk to enable visitors to get in among the resident waterfowl, including black swan, mallards and Cape Barren geese, and they are planting the area with natives.

Gail has a great empathy with and love of animals. This is one of the many things that makes Stoney Oaks such a wonderful place to visit. She has hand-reared nearly all the animals, which visitors are free to handle and which enjoy the attention. The success of the wildlife park is in the bringing of people and animals together.

Stoney Oaks is open on advertised days and during the school holidays. In term time they host organised group visits.

Contact (06)756 7624.



Serena the red deer fawn and Pee Wee—both hand-reared at Stoney Oaks. Photo: Gail Simons.



Gretel Lagoons

Once advertised as "15 hectares and a duck pond", the Hayes' Gretel Lagoons has, over 10 years of planning and effort, become a wetland attraction as Neil Hayes explains

In 1989 a colleague breezed into my office at the Open Polytechnic and dropped a property advert on my desk: Carterton, 15 hectares with duck pond \$60,000.

We had been looking for a Wairarapa lifestyle block so we immediately visited the property.

There were several striking features of the block. It had over 300 mature kahikitea and over 100 mature totara, along with numerous

tawa, matai, kowhai and titoki. There was an outstanding eight hectare oxbow lagoon, of which about half was on the property, numerous bush birds and an abundance of waterfowl. On our first visit we found the very large population of grey teal.

Within a few days we had made a successful offer for the block, although it took seven frustrating months for us to receive title to the property. Thanks to the previous owner, we started our longterm tree planting programme in late 1989 before the title came through. Friend Brendan Coe suggested we should name the place Gretel Lagoons after DU's very successful grey teal nest box programme, Operation Gretel.

Just over 10 years down the track we are close to achieving the aims of the management plan we drew up in 1990. The two main aims were to create and maintain a wildlife habitat area

To create and maintain a wildlife habitat area that accommodates and supports the largest possible number of wildlife species . . .

that accommodates and supports the largest possible number of wildlife species, excluding predators and possums, and to establish a QEII Open Space Covenant over the bush and wetlands.

The programme for achieving the first aim was to involve fencing off both blocks of native bush and the wetland areas and maintaining existing fences. A jungle of willow along the lagoon edge was to be removed and 5,000 trees and shrubs planted. The habitat along the lagoon edge of the bush was to be enhanced by digging and creating islands over the poisoned willow stumps. Nesting boxes for grey teal were to be erected and predator control initiated. The lagoon was to be fished for eels at regular intervals, and a new lagoon created at the far end of the existing oxbow, and viewing hides built.

In 1992, an Open Space Covenant was established over 7.5ha of bush and wetlands. This followed the drawing up of an Open Space Management Plan in 1991 with the assistance of the then QEII representative, Ben Thorpe. There was good news ahead when the Carterton District Council informed us that all rates on the covenanted area would be eliminated. The current QEII representative, John Kirby, became involved with the area soon after the covenant was established and he is a regular visitor to Gretel Lagoons.

By late 2000, we were able to identify over 40 bird species. These include more common species and all the common small birds, as well as shoveler, dabchick, royal spoonbill, several species of cormorant, both species of heron, North American wood duck and cattle egret.

A complete inventory of plants, including native trees, is still being compiled, but includes the natives mentioned above, as well as pukutea, mahoe, lacebark and nettle tree. Considerable regeneration has taken place in the main area of bush. To re-establish areas of bush that were felled in the early 1960s, a major tree planting programme started in 1990 and just about all vacant areas have been planted with nearly 3,000 native trees and plants. This has included over 1,000 kahikitea, 850 totara, 250 cabbage trees, and 500 native flax plants. All the native plants have come from Murray's Nurseries in Woodville. Some exotic species have been planted in areas outside the native bush for instant shelter and firewood.

At our house we have an important waterfowl collection and purpose-built aviaries for breeding rare and endangered New Zealand brown teal. We have been involved in brown teal breeding since the early 70s. On the house pond are most of the species of waterfowl present in New Zealand, as well as a sizeable population of high quality grey duck. The pinioned grey duck on the house pond are



Aerial view of Gretel Lagoons. Photo: Pete Nikolaison.



Lagoon at one end of the oxbow. Photo: Pete Nikolaison.

breeding well and their free-winged progeny are also breeding well on the main lagoon.

The Open Space Covenant allows for limited hunting, and hunting is world class. However, there is a duck shooting rule on the property which provides for anyone shooting a grey duck to give a bottle of whisky to the landowner. This ensures serious efforts are made to identify targets and saves a good number of grey duck.

Predator control has involved trapping the usual pests - ferrets, stoats, rats and cats. On top of the list of more commonly recognised

predators is the harrier hawk which continues to be a major threat to birds and eggs. The harrier is now partially protected and has thrived because of this. I have no doubt that where predator control programmes are being initiated in rare bird recovery programmes the harrier must feature close to the top of the hit list. To a lesser degree pukeko populations need to be managed, too, to prevent their cannibalistic activities affecting rare bird populations.

Gretel Lagoons has also played an important part in the Conservation Corps Wetlands

Programme and the property also features in the Open Polytechnic's distance education courses in "Native Plants" and "Wetlands".

Numerous visitors from all over New Zealand and overseas visit Gretel Lagoons and we have had the pleasure of showing many people the ever-increasing populations of wildlife and their habitat. There is no doubt in our minds that Gretel Lagoons and its environs will eventually rank as one of "the" important wildlife habitats in Wairarapa.



Golden Plover

Also known as Pacific, Asiatic or lesser or least golden plover (*Pluvialis fulva*) is a migrant to New Zealand. Breeding in Siberia and Alaska, it winters throughout the southern hemisphere, hence the significance of the Golden Plover Award (see below).

Arriving here between September and November, six to eight hundred birds spend the summer in New Zealand and head north again in March. Very few winter here. They can be seen anywhere around the coast on tidal flats and estuaries and on fallow or short-grass paddocks several kilometres inland.

In Siberia and Alaska the golden plover breeds on dry upland tundra, preferring a ground cover of lichens and mosses, into which its breeding plumage merges.

Measuring 250mm from beak to tail, it feeds on a wide range of insects and plant seeds and small crustaceans and molluscs.

The Golden Plover Award 2000

The newly instituted 2000 Golden Plover Award, carrying a \$1,000 grant, administered by DU and sponsored by Americans Tony Reiger and Dr Steven Messerschmidt of Alaska, has been awarded to a team of Massey University students studying in the Natural Resources faculty. The team, calling themselves Eco Resource Consultants, was one of three whose projects were completed as part of their course requirements focused on DU members' Ossie and Mary Latham's Swans Mead wetlands.

The Lathams are well into developing a natural habitat near Feilding that will help preserve New Zealand wildlife, benefit the community and provide an aesthetically pleasing area.

Eco Resource Consultants formulated a five year plan for the wetland, investigated the legal aspects of the project, consulted with affected parties, designed a dam and planned predator and weed eradication. Water quality issues and education and tourism opportunities were also investigated. The broad outline of their five year plan included consultation and obtaining necessary authorisations and weed eradication in Year One. Year Two continued pest and weed eradication, culvert and dam construction and a start on planting. The plan suggested plant species, including those which would assist to remove solids from water entering the

wetland, and suggested species for particular locations. Weed and pest control and planting were to continue into years Three and Four. Year Five of the plan included feature tree planting and meeting ongoing requirements.

Ossie Latham, speaking from a "client's" point of view, says the Eco Resource Consultants' report was the best integrated of the three, and the consents and approval work they did will be of long term benefit for the Swans Mead development. Although the report was weaker on the construction design, predator control and plant selection aspects, it has had the practical result of quantifying the scale of planting the actual wetland project will require.

The award was presented last November to Eco Resource Consultants following a presentation by students of all the projects and made on the recommendation of lecturers who supervised the course. Ossie Latham says the teams who worked at Swans Mead were introduced to research into wetlands and the work of DU, and several became quite enthusiastic about wetlands as a distinct category of habitat.

Pictured below (from left rear) are Eco Resource Consultants Jeremy Wood, Simon Blank, Graeme Gallagher, Paul Nelson, Jo Shailer and Lynette Mooney.



Conservation on the NET

The Internet provides a vast amount of material on practically every aspect of the environment and conservation issues. It's a major source for sharing concerns, research and education about the world and national environments.

Below are websites the team producing Flight has found useful. Readers are invited to submit details of sites they find useful. Email to: artscape@xtra.co.nz.

www.ducks.org.nz

At the time this issue of Flight is published the DUNZ website is expected to be up and running at www.ducks.org.nz and you're invited to visit and find out what DU does.

www.wetlandcare.com.au

Wetland Care Australia's website provides interesting information not solely restricted to Australia that is worth catching up on.

www.banrockstation.com.au

A large site which will take you on a tour of the Banrock Station Wines wetland and is narrated by Tony Sharkey who was very much a part of our Wetland Care NZ launch at the Karori Sanctuary last November (see January Flight).

www.ecocitymagazine.com

An online magazine (ezine) examining the ecological impacts of cities, waste management, preservation of open spaces and community building with an environmental emphasis. A good source of features, links and information on environment issues generally.

www.ecoliq.com/magazine

A web-based magazine for those interested in making decisions which are ecologically as well as economically sensible. Provides access to back issues which contain feature articles on a range of environment, development and resource issues and news, both US and international.



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The Value of Vegetation

The city of Washington is like other cities, which are losing their urban forests at an alarming rate. Since 1973, Washington DC has experienced a dramatic loss of tree cover, including a 64 percent decline in the most ecologically valuable areas with heavy tree cover.

This decline, according to an American Forests study, represents more than a quarter billion dollars worth of ecological services. Satellite images from 1973, 1985, and 1997 were compared, showing that areas with high vegetation and tree canopy coverage dropped from 37.4 percent (16,440 acres) to 13.4 percent (5,871 acres) of the total area (43,938 acres). During the same 24-year period, areas with very low tree cover increased from 51 to nearly 72 percent of the total study area.

Understanding cities' green infrastructure, planting and caring for trees and forests will save money and make communities greener, healthier and more livable. The loss of tree cover and increase in impervious surfaces, such as roads and buildings, significantly increases the impacts of stormwater runoff. Replacing this lost stormwater retention capacity with reservoirs, sand filters and other engineered systems was estimated to cost Washington US\$226 million (US\$7.80/square foot). This service was provided previously by trees, vegetation and natural soils, which slow stormwater movement, lower total runoff volume, reduce flooding and improve water as well as air quality. [From *EcoIQ* magazine.com.]

An Indelible Figure

An apology is tendered to readers of Flight who will have noticed the handwritten correction to the Waterfowl and Wetlands Trust report in the last issue of Flight. Technical difficulties in adding what was a stop press item as the press rolled meant that a correction made at the plate stage failed to stick. Acting far above and beyond the call of duty, Alan and Di Wilks amended all 800 copies by hand with the correct figure of \$305,347.

Why Replace Willows?

Willows are a poor substitute for native vegetation. The Tasmanian Department of Primary Industries, Water and Environment's recently released report on the impact of willows on riparian areas identifies the impact of willows on river health. Willows increase shading, drop leaves and provide poor quality wood debris for habitat. Moreover, the type of vegetation on riverbanks or around wetlands has a strong influence on the range of wildlife the habitat can support. The report emphasises, however, that before willows are removed, a revegetation plan favouring native species should be implemented. Simply removing willows may increase erosion and further lower the water quality. [From *WetlandLink Bulletin*, Issue 4, November 2000. *Wetland Care Australia*.]

New Zealand National Parks and Conservation Foundation Launched

A foundation to help protect and conserve New Zealand's unique natural heritage was launched in February at a special function hosted by Prime Minister Helen Clark.

New Zealand National Parks and Conservation Foundation is an independent charitable trust which provides a way for corporates and individuals to invest in New Zealand's special places. The Foundation has the strong support of the Department of Conservation.

Foundation Chairman Hon. Denis Marshall said until now there has been no organisation in New Zealand focused solely on raising funds from the private sector to support conservation.

The Foundation has been established primarily as a fundraiser and grants administrator. It will be complementary to organisations such as Forest & Bird, and does not intend to compete with other conservation organisations. It will not replace Government funding for conservation or environmental work. By fostering community initiatives the Foundation can add value to the public investment.

An endowment fund, with an initial target of \$2 million, will be set up from which annual grants can be made to community conservation projects, particularly those supporting projects in and around national parks. It has already raised more than \$300,000 in corporate sponsorship and donations from Transpower NZ, A.J. Hackett Bungy, Les and Olive Hutchins, Fujitsu NZ, Tourism Milford, Sysdoc Group NZ, Dymocks Bookshops, New Holland Press, JR Design and Busby Ramshaw Grice.

With the support of Transpower NZ, the Foundation has also funded community conservation projects including weed control on Little Barrier Island and in the Rangitikei, support for an endangered species project near Wanaka, assistance to a native mistletoe restoration project in the Karioi Rahui adjacent to Tongariro National Park and help with the Limestone Island restoration project near Whangarei.

For more information: Hon Denis Marshall, Chair, NZ National Parks and Conservation Foundation Ph: (04) 495 3747

Environmental Legal Assistance Scheme

Environmental and community groups will be able to get funds to take cases to the Environment Court.

The Environmental Legal Assistance Scheme was launched in Christchurch on 5 March by the Acting Minister for the Environment, Pete Hodgson. The scheme is designed to help community groups to participate better in the resource management process. It will also help people focus their cases on the relevant issues. "Increasingly, we are seeing that some sections of the community are not being included fully in the resource management process," Mr Hodgson says. "This new scheme will help address that problem."

About \$1 million has been set aside for the scheme from the green issues fund agreed between the Government and the Green Party at the Budget in June 2000. The Ministry for the Environment is now accepting applications for the funding. The first decisions will be made by April.

"Many community groups have single-handedly been carrying the cost of speaking out on issues that are significant for the wider community," Mr Hodgson says. "The Government believes it is time that these groups were given some assistance so they can be better heard."

The Environmental Legal Assistance scheme has two parts. The first provides up to \$20,000 to nonprofit environment and community groups, including iwi and hapu, who are presenting cases to the Environment Court. The second provides grants for education and advisory services on legal processes.

A separate grants scheme to either assist or establish environment centres has also been set up to recognise their value as places providing information on a wide range of environmental issues and available as places for environmental groups to meet.

The Ministry for the Environment will administer the schemes. An independent advisory panel will give recommendations on legal assistance funding applications. Applicants should contact the ministry or visit "What's New" at www.mfe.govt.nz on the Internet.

Wetland Revegetation Using Seed Bank

Seed bank can be an additional source of vegetation for newly created wetlands, or for restoring existing ones.

Seed bank is the store of dormant seeds in the sediment and soil margins of a wetland. Collect it carefully from an existing healthy wetland (the "donor" wetland) by taking small amounts from a range of depths and zones (i.e., shallow water, water's edge, bank, bush margin). Several bucketsful will be sufficient. Avoid collecting seed bank where there are unwanted weeds.

Spread the collected material on a plastic sheet, mix well, and allow to dry in the sun for several days at least. (Some seeds need drying before germination.)

At the site you are revegetating, spread the seed bank in lines perpendicular to the water's edge, from above water level to as deep as you can work. Space lines of seed bank up to 30 metres apart. Cover the seed bank lines with netting or other suitable cover to prevent disturbance.

When the seed bank germinates, it may be possible to weed out undesirable species, or to transplant larger already established species.

To protect and encourage newly germinated plants:

- provide mulch or buffers against water movement, wind and waves
- construct gently sloping areas from the water's edge
- fence to prevent stock grazing
- establish plants when water levels are low and animal pressure is reduced
- ensure water clarity.
- manage water levels to allow slow refilling after drying out.

[Adapted from M.A. Brock and M.T. Casanova. *Are There Plants in Your Wetland? Revegetating Wetlands. Land and Water Resources Research and Development Corporation. Canberra. 2000. ISBN 0 642 76041 1*]



Flight ECOFILE

The Reality of

Global Warming

Concern over global warming highlights how critical it has become to preserve and restore all wetlands - ironically, coastal areas are some of the most developed and populated areas, and places where wetlands have been drained for agriculture and settlement.

The Third Assessment Report of Working Group I of the Intergovernmental Panel on Climate Change (IPCC), released internationally earlier this month to ripple through the headlines says the world has warmed by about 0.6° C since the 1860s and emissions of greenhouse gases are likely to be responsible for most of the temperature increase. Several hundred climate scientists from all over the world, including five from New Zealand, contributed to the report.

Predictions for future temperature rises range from 1.4 to 5.8° C by the year 2100. The scientists also predict rising sea levels, possible changes in large-scale weather patterns, and an increase in heavy rainfall events for many regions of the globe. A warmer climate would raise sea levels as ice caps recede. The decade of the 1990s was the hottest decade of the last century and the warming in this century is warmer than anything in the last 1,000 years in the Northern Hemisphere.

Specific Impacts Predicted

Raised sea levels and extreme weather events threaten flooding of low-lying areas, with a surge in hurricanes, higher temperatures and water shortages.

Threats to species through habitat destruction, farmland turning to desert, fish-supporting coral reefs destroyed and small island states submerged.

Disease and drought could hit rich and poor countries alike. Northern hemisphere countries would probably become hotter, bringing a rise in deaths from heat stroke in cities and diseases until now restricted to tropical areas, like malaria and mortal viral infections.

Regional and international conflicts due to disproportionate impacts of drought, flooding and loss of low-lying areas to rising sea levels on poorer countries, increase in the North-South divide. Farming in tropical and subtropical regions would be worst hit with tens of millions of people at risk from sea-level rise.

Economic/social stress due to effects of global warming could include: collapse of businesses dependent on coastal ecosystems; property loss in overdeveloped coastal areas subject to sea level increases; more serious effects of storms

and floods; stress on the insurance industry due to cost of disaster claims; effects on tourism of temperature changes, destruction of infrastructure, declining local economies.....

Regional Impacts:

Africa - most vulnerable. Disease levels could shoot up, especially in crowded coastal cities which could also face inundation as sea levels rise.

Asia - mangrove forests that protect river and sea banks could be swamped, especially in Bangladesh. Forest fires could become more frequent and warmer conditions could increase the spread of infectious disease. Melting of Himalayan glaciers, which feed river systems providing water to 500 million people, could cause huge flooding and then massive water shortages.

Latin America, from Mexico to Argentina - could see declining crop yields, shrinking deciduous tropical forests and new diseases spreading, with wildlife disappearing.

Southern Europe - more likely to be affected, with an increased risk of water shortage and a deterioration in soil quality that would affect agriculture.

Australia - could face a major threat to agriculture as droughts spread.

Middle East - political tension could be reignited and slide into wars over water resources as rivers dry out.

Wetlands in the Warming Globe Scenario

Wetlands play a double role in the various scenarios of climate and ecological change, both as victims and possible solutions.

Wetlands act as carbon sinks, storing carbon within their plant communities and soil instead of releasing it to the atmosphere as carbon dioxide. Through this natural process, wetlands help to moderate global climate conditions. Their continued preservation becomes more vital in the context of global warming caused by excessive release of greenhouse gasses in which carbon is a major ingredient.

The functions, or ecological services, provided by wetlands have become increasingly recognised as important environmental and economic components of the landscape. Wetland conservation, restoration and watershed protection are becoming more prominent features of sustainable agriculture landuse planning and practice.

Coastal wetland life has adapted over thousands of years to a certain mix of salt and fresh water. As global sea levels have risen, according to the US Geological Survey, between 10 and 25 centimetres in the past 100 years, low-lying coastal wetlands are under strain. Coastal wetlands may be able to survive the rise in salt water if they are allowed to expand into the areas nearby which are at a higher elevation. This can be impeded if those areas are developed, the slope is too steep or there are barriers such as walls.

Non-tidal wetlands will also be reduced. These open-water and waterlogged areas provide refuge and breeding grounds for many species. They also help to improve water quality and control floods and droughts. Studies from several countries suggest that a warmer climate will contribute to the decline of wetlands through higher evaporation. By altering

their hydrological regimes, climate change will influence the biological, biogeochemical and hydrological functions of these ecosystems, as well as their geographical distribution.

[UNDP-GEF Climate Change Information Kit]

Six Strategies for Adapting to Climate Change

Loss prevention: by building barriers against sea-level rise.

Loss reduction: redesigning crop mixes to ensure a guaranteed minimum yield under even the worst conditions.

Loss spreading or sharing: the burden on those directly affected by climate change can be eased through government disaster relief.

Changing a use or activity: communities can also change a use or activity that is no longer viable.

Relocating activities: by re-siting a hydro-electric power unit in a place where there is more water.

Site restoration: sometimes it may be best to restore a site, such as an historical monument newly vulnerable to flood damage.

[UNDP-GEF Climate Change Information Kit]

Impact on Wildlife and Waterfowl

Changes in wildlife behaviour have been observed which are thought to be related to climate change. These are the result of the factors which change climatic conditions in habitats which in turn affect food supplies, the presence or absence of other species and physical changes to habitats.

Changes in the breeding and nesting times of bird species have been observed. These may relate to species changing times spent in different habitats, in turn due to changes in ocean surface temperature and ocean currents that might be associated with climate change.

Declines or increases in species numbers has been recorded. For example, a decline in Adeli penguin numbers is thought to be tied to a reduction in the frequency of years with extensive heavy winter sea ice in the Antarctic making suitable feeding sites too scarce or distant. At the same time, Chin-strap Penguin numbers have increased.

A reduction in suitable breeding habitats faces some species as increasing temperatures and drought conditions add to the loss of wetlands. This could lead to an almost 50% reduction in breeding waterfowl numbers. Species may be able to move elsewhere to breed, although wetlands in those areas may also be adversely affected by climate change, become overcrowded, or unable to supply sufficient food.

As habitats for vegetation types change the bird species dependent on them become extinct or face interspecies competition.

There is widespread agreement that the biodiversity of given regions will alter, some facing fewer bird and waterfowl species.

[Adapted from *Is Climate Changing Where the Wild Things Are?* EPA conference paper, Washington DC, 1998.]





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