

Wet & Wild

Wrybills on Rangitata River



Finding the tiny camouflaged wrybill (*Anarhynchus frontalis*) amongst greywacke gravels on the vast 7500ha upper Rangitata River in Mid Canterbury is one challenge staff of DOC's O Tu Wharekai Wetland Restoration Project contend with.

The second is how to manage the small but nationally significant population which battles with a suite of impacts: flooding, mammalian and avian predation, nest disturbance by recreationists and dogs, weed invasion and four wheel drives.

The wrybill population is in decline with fewer than 5000 birds remaining. Wrybills nest almost exclusively on braided rivers on the east coast of the South Island, and the upper Rangitata River is recognised as one of the national strongholds for breeding wrybill with up to 250 birds.

Nest selection – adapting to the environment

Research contractor Peter Langlands spent the summer of the 2008/09 breeding season studying wrybill nesting requirements on the upper Rangitata River. Wrybills showed a clear preference for a specific habitat type: fine gravels with no significant vegetation, on elevated gravel beds, and situated on spits or islands. This allows incubating birds a clear view of the surrounding environment. This adaptation worked well in the ideal pre-European world when the only issues wrybill had to contend with were predation by our

native falcon and harrier hawk, and the odd flood event.

Concerns for conservation

While nesting in the bare gravels allows wrybills to react to approaching predators, only a small proportion of the river matched these habitat criteria and large sections of river had no breeding birds. Concerns are compounded by the finer gravels being close to channels making them highly vulnerable to large flood events. The 2008 wrybill breeding season was characterised by two major flood events, effectively removing a high proportion of the first and second breeding attempts.

Overall wrybills will not tolerate the exotic broom (*Cytisus sp.*) around their nests and its presence appears to displace wrybill from potential breeding habitat due to the threat of predation. DOC and local landcare groups have extensive control programs in place for broom and lupin to maintain the mobile shingles, braids and lack of cover characteristic of their habitat.

Wrybills choose well elevated parts of the river to nest, often on gravel spits. Unfortunately these are also favoured as access by vehicles increasing the potential for nests to be run over. Feral cats, ferrets and hedgehogs are frequently detected on the riverbed, as are Norway rats, possums, stoats and weasels - all of which prey on wrybill nests. Large plants like broom provide cover for predators which gives wrybills little opportunity to distract

**Peter Langlands and Wendy Sullivan,
Department of Conservation**

predators away from the nest. Black-backed gulls are a native predator of wrybills. This study showed wrybills avoiding nesting near a black-backed gull colony, despite being situated in ideal wrybill habitat. In future the effectiveness of predator control will be investigated.

Targeting management

While the wrybills highly selective nature can result in reduced available habitat, there are benefits to this behaviour. As location of wrybill nests appears to be quite predictable, understanding habitat requirements will assist with targeted monitoring and management. Ultimately, this increased knowledge ensures resources for weed and predator control are allocated where they are most effective.

For further information: www.doc.govt.nz/conservation/land-and-freshwater/wetlands/
Email: arawaikakariki@doc.govt.nz

Photo: Female wrybill incubating with good vision around the nest (P.Langlands/DOC)

Wet & Wild is the National Wetland Trust's quarterly publication. We seek contributions, though published at the editor's discretion. Each issue will be available on: www.wetlandtrust.org.nz within two months of publication, where they can be downloaded as pdfs.

Membership forms can also be downloaded from the website.

A grateful thanks to Mighty River Power for sponsoring the National Wetland Trust newsletter.

Submit articles to the editor Shonagh Lindsay
at: shonagh.lindsay@xtra.co.nz

Contact the NWT on www.wetlandtrust.org.nz



NWT News

National Wetland Restoration Symposium: 3-5 March 2010, Rotorua

Early bird closes 31 October!!

This symposium will provide a highly practical forum for knowledge exchange, training and networking for people committed to wetland biodiversity and restoration from all over New Zealand, including landowners, iwi, community groups, policy makers and wetland scientists. Organised by the Bay of Plenty Wetlands Forum in association with the National Wetland Trust.

A discount rate is available for full-time students, wetland landowners and community group volunteers thanks to a grant from the Department of Conservation's Biodiversity Advice Fund.

To register visit www.wetlandtrust.org.nz

Our major sponsors include: University of Waikato, Department of Conservation, Environment Bay of Plenty, Fish and Game Council (Eastern), Western Bay of Plenty District Council, Landcare Research, NIWA, Treescape, Wildland Consultants and Waimangu Thermal Valley.

There are still exhibition spaces for companies to promote their wetland wares and services. **Contact enquiries@wetlandtrust.org.nz for more information.**

Wetlands Directory

We have launched the first phase of our web-based wetlands directory designed to encourage people to explore the many marvelous wetlands in New Zealand. Thanks to support from the Auckland Regional Council our first stage of the directory features several great wetlands in the Auckland region. These all have public walkways or special features such as the wetlands at Tawharanui Regional Park where you can see the rare pateke (brown teal), and the fantastic restored Waiatarua wetland in Meadowbank.

The next section to be completed will be for the Wellington Region with sponsorship from the Greater Wellington Regional Council.

Other regions will be completed as funding is obtained. If you would like to sponsor a region or nominate a wetland for inclusion contact: karen.denyer@wetlandtrust.org.nz

Visit www.wetlandtrust.org.nz or Google "visiting wetlands NZ".

Waikato Region's Sustainable Business of the Year Awards 2009

The NWT was a finalist in the Not-for-Profit category of the awards with Te Whangai Trust announced as the winner on September 10th at the awards event.

The Daltons started Te Whangai Trust, a sustainable eco-nursery in Miranda, which employs 16 staff and nurtures around 120,000 native plants, making an impressive start since its establishment in November 2007.



Staffed by people finding it difficult to get into the job market, the Trust offers training to people who have generally been unemployed for some time, disadvantaged in the workforce through circumstances or illness, and referred to them by Work and Income. Te Whangai's goal is to support staff through to finding fulltime jobs in the workforce.

Under its contract with the Social Development Ministry Te Whangai cannot compete on the commercial market and it sells to ratepayer and taxpayer funded environmental projects, mainly through local councils, Environment Waikato, and to industries, farmers, schools and others planting for compliance or conservation on a not-for-profit basis. To see the Waikato Times story on Te Whangai go to: <http://www.stuff.co.nz/waikato-times/features/563718>

Visit the Sustainable Business Network at www.sustainable.org.nz

Sustainable Business Network Event: October 18th

The National Wetland Trust is hosting a Sustainable Business Network event in October to introduce local and national business representatives to some of the Waikato's intriguing wetlands. The event will visit wetlands in the Waipa area, including Lake Serpentine. For more information contact Michelle Locke: waikato@sustainable.org.nz

World Wetlands Day 2010 - Wetlands, Biodiversity, and Climate Change

"Wetlands, Biodiversity, and Climate Change" is the theme for World Wetlands Day 2010. As many of you may be aware 2010 has been proclaimed by the United Nations as the International Year of Biodiversity.

Lookout for the NWT's WWD event in the December issue of Wet & Wild. To read more about the international theme visit: www.ramsar.org/wwd/10

New Patron endorsed at AGM

Ruud Kleinpaste (the Bug Man) was overwhelmingly endorsed as our new patron at our 9th AGM held in August. Ruud is a tireless advocate for biodiversity, particularly for the 'little guys' of the invertebrate world. We are proud to have him as our patron. Listen out for wetland related announcements on his Sunday radio show on 1ZB.

Award-winning author Janet Hunt gave a very entertaining account of the voyage of discovery that lead to her book: New Zealand Wetlands - a bitter sweet story.

Eleven Trustees were re-elected unopposed and the positions of Treasurer and Secretary co-opted.

Regional Roundup

Tahuna Torea Nature Reserve Plant Handbook Launch

The Tamaki Estuary Protection Society, as part of the Auckland Heritage Festival, is launching the Tahuna Torea Nature Reserve Plant Handbook by Alan Esler and Leslie Haines at 6 pm on Thursday 1st October 2009 at St Philip's Lounge, 92 St Heliers Bay Road, St Heliers, Auckland.

The 44-page booklet gives a full description of the plant life of the reserve and includes a wealth of diagrams and vegetation maps and 57 plant drawings by Alan Esler. The price is \$10. To purchase the book please contact the Tamaki Estuary Protection Society, fax (09) 575 4836 or phone (09) 575 6142.

Waters for the Future: Balancing its Values 23-27 November, Whangarei Northland

The NZ Hydrological & Freshwater Sciences Societies conference offers a special session on Wetland Conservation & Ecohydrology sponsored by the DOC Arawai Kakariki Wetland Restoration Programme. The sessions include a tour of Whangarei Sewage

Treatment Plant, which incorporates waste treatment and polishing through several wetlands well designed for this process as well as a visit to the headwaters of the Patua River where a series of constructed ponds and wetlands - protected under a QE11 Covenant - supports a range of species including the rare Brown Teal.

To register for the conference contact Cue Conferences, Tel: 03 546 6338

For more information on the wetland field trip visit: http://on-cue.co.nz/nzhs_fss09/FieldTrips.html

Waikato Biodiversity Forum

A Waikato Biodiversity Forum held on the 29 June focused on developing solutions for maintaining the momentum of the Waiwhakareke (Horseshoe Lake) Natural Heritage project.

The field trip to the park near Hamilton explored its research planting, the mix of plants already planted as well as plans for hillside planting with kauri, tanekaha, rewarewa on the ridge crest and tawa and rimu on the hill slope.

In the afternoon participants attended workshops such as funding, developing a community nursery, sustaining a community group and education and publicity. As a result

of the Forum Friends of Waiwhakareke is now established with around 35 Friends on the list. Our first working bee was held on 29 August. Working bees will be held on the last Saturday morning of each month.

Contact: Moira Cursey m.cursey@xtra.co.nz
07-846-5066 if you want to join the Friends of Waiwhakareke and receive the newsletter.

International News Emerging Wetland Issues for the Oceania Region Conference

28 -31 October 2009

**Hunter Wetlands Centre, Shortland
NSW, Australia**

An exceptional opportunity for those involved in communication, education, participation and awareness-raising (CEPA) to come together and share, learn and reenergize their work.

The two-day conference will showcase best practice and share experiences of wetland CEPA delivery techniques, including innovative means to engage local communities, schools and visitors in the underlying efforts of wetland conservation. It will also provide an update on the Ramsar Convention and its objectives.

For more information please contact David Lawrie: Lawrie@madsen-lawrie.co.nz

Ramsar intern position: Asia-Oceania

The Ramsar Secretariat welcomes applications for the position of Intern/Assistant Advisor for the Asia-Oceania region, a 12-month posting (possibly extendable up to 18 months) in the Ramsar Secretariat in Switzerland to begin in mid-February 2010. The deadline for applications is 9 October 2009. **See the NWT website Latest Updates page for details:** www.wetlandtrust.org.nz

Wetland Events

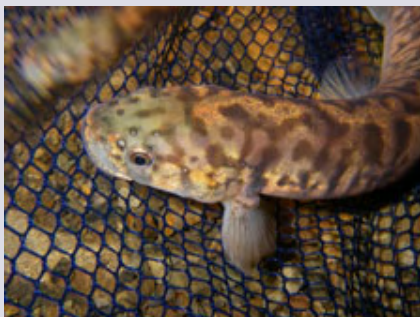
Remember to let us know of any wetland events you are running and we'll help promote it on our website and newsletter: enquiries@wetlandtrust.org.nz. Here are some upcoming events:

Welcome the Birds 11 October Witness the spring arrival of migratory wader birds at Miranda Shore Bird Centre, Firth of Thames on October 11 2009. 10:00am Guest speaker: Jesse Conklin - Godwit studies at Foxton. For more information see: www.miranda-shorebird.org.nz/about.html

Wader Identification Course 24 - 25 October

Learn how to sort out those tricky shorebirds at Miranda Shore Bird Centre. Two intensive days with expert tutors. A mix of theory and practice, with as much time as possible in the field. For more information see: www.miranda-shorebird.org.nz/about.html

Check your whitebait bucket for climbers



The Department of Conservation has released a simple test to help white-baiters enjoy a feed while protecting our most rare native fish - check your bucket for climbers!

For some of our more threatened freshwater species, that's exactly the escape they attempt. Rare species like koaro and shortjaw kokopu are amongst our best climbers, and can climb straight up a vertical surface, if it's damp enough. They can even negotiate the side of a whitebaiter's bucket, although often not all the way up.

"This comes in handy if you want to pick your rare from your fry", says Department

of Conservation ranger Hannah Rainforth. In a bucket of whitebait catch, you'll likely find five species - inanga ('whitebait'), banded kokopu, short-jaw kokopu, giant kokopu, and koaro. Inanga are poor climbers, and will stay swimming around in the bucket. But when the oxygen in the water starts to drop, you might find the others literally climbing the walls.

"After the fish have been there a while, their respiration gradually uses up the oxygen in the water. This spurs them into action, and they seek out better, more oxygenated water. And that's a helpful way of telling one small, transparent indistinguishable fish from another", explains Ms Rainforth.

It's also a helpful way of saving a species from extinction. Of the five whitebait species, inanga are most common. They are not so fussy about their habitat and can often be found in lower catchment waters. But giant kokopu prefer swampy and heavily vegetated streams, while short-jaw kokopu, banded kokopu and koaro prefer fast flowing rocky streams with forest cover. All of these whitebait species spend part of their life at

sea, which means they need a clear path to travel between habitats.

The traditional kiwi pastime of whitebaiting is dependent on having sustainable native fish populations, but the long-term survival of our native fish, like those that make up your whitebait catch, is under threat. The amount of habitat is shrinking as wetlands are drained, streamside vegetation is removed and barriers to fish passage are placed in waterways. Pollution and introduced pests also have a big impact on native fish populations.

If you want future generations to be able to enjoy whitebaiting, keep an eye on your bucket while you are tending your net this season. "If you spot any fish making the mountainous climb up the side of it, scoop them out and release them", advises Ms Rainforth. "That way, you still get a fritter, and our rare and threatened species get to live a day longer".

Whitebait season runs until 30th November (exceptions made for the West Coast and Chatham Islands). **Source:** <http://www.doc.govt.nz/about-doc/news/media-releases/help-save-a-species-from-extinction/>

Wetland Centre Plans Go South



The Trust's plans to build and operate a national wetland education centre have taken an unexpected turn with an offer from Waipa District Council to build on council reserve land adjacent to Lake Serpentine, between Hamilton and Te Awamutu.

The pretty lake-side setting offers a much larger area for the project, and already boasts three of the eight planned wetland 'gardens'. There would be no need to develop clever ways to portray a peat lake and peat bog, or to wait decades for a kahikatea forest to mature.

The Lake Serpentine (aka Rotopiko) complex of three linked peat lakes formed at the end of the last glaciation - around 17,000 years ago - when the ancient Waikato River blocked river valleys with silt and sand, forming small lakes. As the climate became wetter and warmer, peat built up around the lakes, deepening them and staining their waters a dark tea-brown with tannin.

The Rotopiko lakes lack invasive aquatic plants, and therefore boast one of the best representations of a native aquatic plant assemblage in the Waikato region. Both species of eel, common bully and smelt are found in the lakes, along with 14 species of wildfowl including the threatened grey duck, Australasian bittern, spotless crake and banded rail. The threatened giant cane rush (*Sporadanthus ferrugineus*) has been planted adjacent to the site by the NZ Landcare Trust and supporters as part of a trial to re-establish peat bogs. A mature kahikatea stand was recently added to the reserve and has been fenced and restored. The lakes are also culturally significant, with a historic pa site.

The Department of Conservation manages the lakes and has been restoring them with willow removal, native plantings and exotic fish management.

Opportunities at the site include;

- * a predator-proof fence,
- * native species re-introductions,



- * walking trails,
- * bird hides,
- * picnic areas,
- * viewing platform,
- * sedgeland restoration,
- * stepping stones adventure trail for the kids,
- * interpretation shelters and
- * a national visitor centre.

While the lakes are an attraction in their own right, the intention remains one of creating a national centre to provide information about all wetland types in New Zealand. There is potential to acquire adjacent land in the future to build a more elaborate centre, additional outdoor exhibits, and the planned wetland 'gardens'.

The recession has, of course, made the search for sponsorship and funding difficult, but a generous grant from Transpower, and support also from Environment Waikato and Trust Waikato to further develop our plans, has re-ignited the project.

The Trust is looking seriously at this offer from Waipa District, and currently working through consultation with neighbours, including the Department of Conservation, access off the highway, and a new design to suit the more natural setting.

Karen Denyer, Executive Officer, NWT

Images: Top, Panoramic view of Lake Serpentine, Courtesy Sonia Frimmel.

Below, View from the road north; View of proposed building entrance.





The Golden Plover Award was established in 2001 by Drs Tony Reiger and Steven Messerschmidt, in conjunction with the National Wetland Trust and the University of Waikato. The Award is up to a value of up to \$1000 and is open to a student undertaking original research at Masters level (part-time or full-time) at any university in New Zealand on any topic relating to the conservation, restoration or advancement of knowledge of wetlands.



This years winner of the Golden Plover Wetland Research Award is Craig Allen who is undertaking a Master of Science (MSc) thesis on wetland hydrology titled: *The hydrological*

characteristics of Te Hapua wetland: the effects of climate change and bore abstraction on water levels and ecology.

Craig's involvement in outdoor education and youth development over the past five years has put him in touch with people from a wide age bracket and social background.

His choice of a Master in Science degree at Wellington University allows him to work on a local project and acquire new skills and knowledge towards a career in environmental education. The Te Hapua project involves working closely with water resource and environmental staff at Wellington Regional Council and Kapiti Coast District Council,

as well as with members of the Friends of Te Hapua Wetland and Dunes conservation group (land owners).

Research Overview

Te Hapua wetland is a complex of small wetlands approximately 1 hour north of Wellington. The wetlands are considered the best preserved example of the 300 hectares of wetland that remains of the 'Great Swamp' - a huge swamp network that once spanned over 2000 ha between Paekakariki and Foxton[KD1]. It represents a portion of the region's remaining palustrine swamps, which are estimated to have been reduced to just one percent of the pre-1900 expanse.

The wetlands are home to a number of rarer species including the Australasian Bittern (nationally endangered) and several regionally threatened birds and plants. Groundwater levels in the area are in steady decline. Swamps like Te Hapua rely on groundwater seepage to maintain water levels as most receive little or no surface water input other than direct runoff and throughflow from surrounding land. This coupled with their seasonal (ephemeral) hydroperiod makes them vulnerable to damage and loss given a change in hydraulic input.

The hydrology of Te Hapua wetland has not yet been studied. Given recent efforts by DOC, Wellington Regional Council and Kapiti Coast District Council to protect and restore native species in the area, an understanding of the hydrological processes that maintain these ecosystems is fundamental for the wetland's future survival. Craig's study will gather field data from surface and groundwater observation sites around the wetland to determine if there is leakage between them. This will help build a picture of the relationship between the ground and surface water and calculate a water balance for the wetland. This

information will be valuable when looking at the long term viability of Te Hapua wetland, as well as future estimates of future safe yields for groundwater abstraction, and future studies done to develop a predictive model for abstraction rates given change in climate.

There were three other applicants to the Golden Plover Wetland Research Award. Briar Hill (Master of Environmental Science, University of Auckland) will primarily investigate the invertebrate community structure and composition of in-stream wetland vegetation and the adjacent stream channel to determine whether invertebrate assemblages within the wetland vegetation differ from those of the adjacent up and downstream reaches, and between land uses.

Jennifer Rickett (MSc, Conservation Biology, Massey University) will monitor two of the released pateke populations, at Tawharanui Regional Park, Auckland, and Cape Kidnappers & Ocean Beach Wildlife Preserve in Hawke's Bay. Her research aims to ascertain the success of such introductions, and research basic ecological information such as home range and habitat selection preferences.

Stephen Kitto (MSc, Environmental Science, University of Canterbury) is researching 'The Environmental History of Te Waihora, Lake Ellesmere' to provide baseline information on the natural state of the lake, and on the natural, ongoing changes in the waterway. The lake is now smaller, more turbid and nutrient enriched than prior to human settlement. Its restoration to a natural or quasi-natural state is an objective shared by the local Iwi, councils and the wider community. (Golden Plover image. I. Southey)

For more information on the Golden Plover Award contact the Scholarships Office, University of Waikato. Applications re-open 2010.

Pateke update at Travis Wetland



In May 2009 after much anticipation and on the second anniversary of release, an un-banded female pateke (brown teal) was seen in the company of a banded male bird.

Two years ago on May 16th, 2007, twenty captive reared pateke (10 male and 10 female) were released into Travis Wetland. This was the first recent reintroduction in the South Island, and experimental in releasing them into an urban environment. The habitat at Travis Wetland is high quality and home to a large number of native and migratory wetland birds, glossy ibis, Australasian bittern and marsh crake are seen here. All 20 birds were fitted with transmitters and were monitored for 18 months after which the batteries failed. Initial losses of the young captive reared birds was expected and occurred within the first six months. Recovering the dead birds was rather heart breaking. The causes of death were predation by harriers (5), cats (4) and

stoats (1) and car (1). Eight of the original twenty birds have now survived for two years, which seems to mirror reports from other release sites. In September 2008 one nest was located with 6 eggs. In late October 2 adult pairs were seen with 2 ducklings each. With the nesting season underway the pateke have now become invisible again. We will be watching closely for juvenile birds. Now that these 2 year -resident Brown Teal have learnt the ways of the wild and are doing well at Travis wetland, we'd love to boost their numbers with some new recruits.

John Skilton, Christchurch City Council

Photo of pateke release at Travis wetland, by Alex Mitchell



Restoring wetlands at Hikutaia

Doug and Jane Ashby have put in much hard work with riparian planting, and later wetland restoration, over a period of 15-20 years – enough time to see the fruits of that effort.

Their 48-hectare lifestyle block at Hikutaia - between Thames and Paeroa - is partly leased to local dairy farmers as runoff to raise heifers and calves. A financial necessity due to Doug's early retirement from teaching, however, they have diligently protected and restored the riparian margins of the Onetai stream that runs through their property and three years ago began restoring and extending a gully wetland fed by this stream.

"We began planting the 700 metre length of the Onetai when we bought our place in 1973 but that all came to a grinding halt with the birth of our triplet sons," says Doug. "I guess we didn't fully get back into it until they were old enough to give us a hand - a good 10 to 15 years later."

"We got serious with our wetland in 2006, protecting and planting its perimeter, and over the last year we've planted around 2000 trees extending it up to where it enters the valley."

"We were lucky in having original *Bolboschoenus fluviatilis* (Kukuraho, Marsh club rush) and Raupo established, and we've added to that with kahikatea, cordyline (cabbage trees), manuka, then *Phormium tenax* (flax, harakeke) and *Carex secta* on the margins."

Revegetation growth on the wetland is much more rapid than the riparian margins of their stream, so that after only three years the Ashbys have the reward of reasonably sized cordylines, carex and flaxes. By contrast the forest trees they've planted in a two to five meter riparian margin have been much slower growing.



Doug developed a plant list of the species indigenous to the area, and so hopefully frost-tolerant, for the riparian planting. These were largely kauri, rewarewa, tawa, tanekaha along with kowhai and the *Pittosporum crassifolium* (karo), especially loved by bellbirds.

"They feast on the karo for a month or more, but wood pigeons and tui also feed here all year round, though we suspect they nest back in Coromandel Forest Park just a kilometre or so away."

Nearly all plants have been sourced from Taupo Nursery, which when they first began was virtually the only nursery selling native plants, and whose plant expertise and quality has been consistent for years says Doug. The one exception was when they sourced all the plants for a much smaller open water wetland, close to their house, from wildling seedlings on a nearby embankment.

However, getting indigenous groundcover plants established has been remarkably difficult. Doug assumes this is because most of the land was in grazing for years. And although common wisdom is that ferns will regenerate on their own, apart from an area of land disturbed when they dug out a pond and from which fern spores germinated

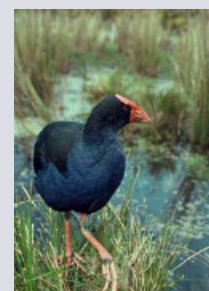
successfully, this has not been the case. "It does make you realise how complex the ecosystem here is, we are still struggling to get a good understorey established and it does become very expensive to buy and plant this as well as the trees."

Over time though the Ashbys expect to see visiting birds bring seed in, and already they've seen shrubs growing along the stream margins that appear to have washed down from nearby forest, and plants such as nikau and kawakawa naturally establishing.

An enclosure they created for six magnificent huge kahikateas has also been a salutatory lesson in the necessity of protection for successful regeneration. Experience has taught them that for the first three years after any planting they need to release the plants from faster growing exotic species each spring. The enclosure was one time when they decided not to, and it was a disastrous experiment says Doug. Compounded not long after by stock getting in when electric fences were left turned off by the farmer leasing their land as runoff.

"We were so heartbroken, Jane and I couldn't go into the enclosure for two months. Our farm is our garden."

This is not a view common to local farmers, so grazing and pugging of wetland areas as well as stock in waterways are still a common sight, says Doug. Hopefully, this will change as Environment Waikato works with farmers to collaborate in catchment protection throughout the area. **Photo: wetland planting 2006-07 D. Ashby**



the life sustaining force of their local streams and catchments. WBC is now active in Gisborne, Marlborough South, Northland and Canterbury.

Visit their website at:

www.whitebaitconnection.co.nz

Cool for kids: school resources on wetland themes

The DoC website has a number of resource kits you can download. Check out: www.doc.govt.nz/getting-involved/students-and-teachers/themes-and-resources/themes/

WET FEET– Investigating fresh water is a teaching resource for fresh water, wetlands, dune lakes, streams and rivers. This kit was released in March 2009.

WETLANDS – Learn about wetlands by looking at the West Coast's bogs, pakihi, swamps, lakes, lagoons and estuaries. The information and teaching activities can be

used with wetlands anywhere in New Zealand.

RIVER LIFE – this resource looks at the Upper Waitaki Basin, but concepts can be applied to rivers anywhere in New Zealand

THE WHITEBAIT CONNECTION – Is an action based environmental education programme offering concrete and specific ways in which all New Zealanders can come to understand and become involved in the future health of our local streams and rivers. The programme aims to inspire and educate schools, community groups and tangata whenua to restore and take care of

Athenree Wetland Widened

The breach of a stop-bank along the Waiau River by Department of Conservation (DOC) staff yesterday, was the first step in fulfilling the dying wishes of the late Maurice (Snow) Garde-Browne who wanted part of his Athenree farm restored to wetland.

In 2006, Mr Browne gifted 22 hectares of low lying grazing land to the Department on the condition that it would be restored to wetland and saltmarsh. The gifted land is adjacent to the existing Athenree Wildlife Refuge Reserve.

"It was an incredibly generous gift," says DOC Ranger, Dan Rapson who is managing the wetland restoration project.

"The Athenree wetland is regionally significant. It holds some of the largest populations of threatened wetland species in the Bay including Australasian bittern, banded rail and North Island fernbird. By increasing the wet area, there will be more habitat and hiding places over time, allowing these populations to grow further".



The key to wetland restoration is letting water in and keeping the area wet. The Department has been working with Environment Bay of Plenty in planning the project. The two agencies expect that the stop bank will be sufficient for the high tide coming up-river to inundate the area over time, killing off the grass and weeds and providing suitable environment for salt marsh plants to establish.

Many of the wetlands around the margins of Tauranga Harbour have been modified or lost

over the years due to reclamation, drainage, weed encroachment and grazing.

Yet these wetlands provide valuable ecosystem services to people, including flood & coastal hazard mitigation and control, sediment filtering, water quality regulation and carbon absorption, all of which are vital to a healthy economy. Along with habitat for rare native plants and animals, wetlands also offer economic and social benefit to people through outdoor recreation and tourism opportunities.

The Department plans to work with the local Council and community in the coming years to involve people in the management of the wetland and develop visitor access. This work was kicked off with a community planting day on Sunday 13th September as part of the Conservation Week (13-20 September) programme.

Photo: Daniel Rapson (DOC), Daryl Hall (Environment BOP) and Braden Rowson (Environment BOP) assess the stopbank breach following the first high tide.

Story & Images courtesy of DOC Tauranga

RMA Changes

The Resource Management Act 1991 has recently undergone a substantial review. One of the key changes within the amendment is the phasing out of Council rules for the protection of urban vegetation. Rules stopping people clearing bush or removing individual trees in city areas exist to help maintain amenity and to protect habitat for wildlife. Under the amendment however, from 2012, Councils will no longer be permitted to have rules in their District Plan that prevent people from cutting or felling vegetation. There are of course some exceptions, such as vegetation within reserves, vegetation subject to a DoC conservation plan and those specifically identified in something like a heritage schedule.

Protection of vegetation is the primary tool used by urban councils to maintain and enhance urban biodiversity. Urban areas usually contain highly fragmented networks of habitat and are socially very important as they are often the nearest that city dwellers get to nature. Areas of bush, wetlands and coastal plant communities in cities are generally too small to qualify for large scale covenanting programmes such as QEII, and



often fall over multiple properties. General tree protection rules help to maintain a matrix of mature and continuous vegetation across the city. The law changes will place a much greater reliance on non-regulatory protection mechanisms and the actions of individual property owners.

Most cities in New Zealand have some form of tree protection rules, but nowhere more than Greater Auckland. Auckland is built on the isthmus between two large natural harbours and contains a wealth of biodiversity etched across the urban form. Vast gully systems lie in private property that act as corridors between local reserves and indeed between biodiversity hotspots such as Tiritiri Matangi and the Waitakere Ranges. Being

a lowland coastal environment, Auckland also has many rare plant communities on private land that to date have relied on tree protection rules to some degree to be retained.

The new reliance upon the actions of private landowners makes the awareness-raising of non government advocacy organisations all the more important as we attempt to engage landowners in conservation and let them know how they can maintain the things we all treasure on their own land. Covenanting of private areas of bush and other environments like wetlands is likely to become increasingly common, which will place demands of regulatory agencies to ensure that support and information and even financial assistance is available to enable these to be established and maintained. If there's a patch of land on your property that you would like to see protected for the benefit of future generations, then contact your local council or NGO and see what programmes they have in place to help you on your way.

Marie Brown, Environmental Policy Advisor, Natural Environment Team, Environmental Policy & Planning, Strategy & Policy Division, North Shore City Council (and NWT Trustee).

Carbon - the current situation



The Kyoto protocol was adopted by about 130 countries in 1997 and came into force in 2005, with 183 countries now signed up. The agreement is to reduce greenhouse gas (GHG) emissions by 5.2% of the 1990 level by the year 2012 (note, though, that this will be 29% of the GHG concentration that we would have expected in 2012 without Kyoto). The six GHGs all have different potencies as heat-trappers, so each is expressed in 'carbon dioxide equivalents' (CO₂ eq).

And that's only the start, of course - 5% is nowhere near enough to keep atmospheric CO₂ below 450 parts per million. In December, the contracting parties meet in Copenhagen to negotiate a new protocol, which will be effective from the beginning of 2013. Hopefully son-of-Kyoto will include some big players (USA, China, Australia) who excluded themselves from the first round.

New Zealand introduced legislation to give effect to Kyoto in 2007, although the start date for counting agricultural emissions was delayed until after 2012. Whilst industry, energy, transport and agriculture are all included in the emissions tally, at present only forestry can be used to generate emissions credits. Under the NZ Emissions Trading Scheme (ETS), debits (calculated by government, in accordance with internationally agreed guidelines) must be balanced (by the emitter) by purchasing credits.

On 14 September 2009, the government announced modifications to the ETS (<http://www.beehive.govt.nz/release/revised+ets+balances+nz%E2%80%99s+environment+amp+economy>) and also set a target range, to be achieved by 2020, of 10-20% below 1990

levels. This will be taken to the new round of negotiations in Copenhagen.

There are strict rules, of course. In order to start earning credits, a native or exotic forest block must be at least one hectare, with a minimum width of 30m, a crown cover of at least 30% and a post-1989 planting date. After 25 years, a 1ha radiata plantation is deemed to have sequestered 800 tonnes of CO₂ at 32t/yr, counted from a tree age of 5yr. A native stand is counted at only 8.4t/ha/yr but, of course, it will still be recording a credit long after the pines have been felled. Official conversion tables may be consulted at: <http://www.maf.govt.nz/sustainable-forestry/ets/guide/lookup-table-guide.pdf>

Wetlands are not part of the Kyoto agreement, either as emitters or as credits, but there is currently intensive lobbying, particularly from the US and Europe, to include them in the Copenhagen agreement. There are powerful arguments in support of this change. On the debit side, for example, Indonesia earns 3rd ranking in the global league table of GHG emitters through its massive agriculture and plantation-driven peat fires.

There is enough carbon in the world's peat deposits to double the carbon content of the atmosphere. As the climate of the boreal peatlands of Canada and Russia warms at over twice the speed of the rest of the world, GHG losses (mainly CO₂ and methane) from this vast carbon store (about 30% of global soil carbon) are soaring.

On the credit side, conserving and rehabilitating peatlands, retiring peatlands from development and improving management

practices for peatland agriculture, can be expected to earn very significant credits. After all, drained and degrading peatlands worldwide release 3Bt of CO₂ annually - 11% of the world's fossil fuel emissions and, closer to home, degrading peatlands in the Waikato releases well over 11% of NZ's fossil fuel emissions.

If Copenhagen includes wetlands, NZ is very likely to ratify this change and credits of maybe 5-15t CO₂ eq /ha/yr can be expected, although there are, as yet, no official conversion tables. The government will have to decide how to handle emissions from degrading peats under agriculture, and although farmers with significant areas of organic soils are not likely to be penalised as such (peatland agriculture is impossible without increased GHG losses), there could well be provision for best-practice incentives.



In fact it makes a lot of sense to include soils in the new international protocol, because all functional soils have an organic content, both living and dead and there is more carbon in the world's soils than there is in all of the forests.

New Zealand agricultural soils typically contain between 2 and 5% carbon (about 5-15% CO₂ eq), but there is a continuous gradient from mineral soils, through organic soils (usually up to 20% carbon) to peats (20-50% carbon) and, for comparison, lignite is about 70% carbon. So best-practice incentives really need to be accorded to all soil management.

Inclusion of wetlands in the new carbon emissions protocol would be good for wetlands conservation and good for the planet.

Row Robinson, Mighty River Power and Keith Thompson, National Wetland Trust Carbon Committee Convenor

Photos: Left above, ditch showing peat soils; Above, peat bog in forestry, Keith Thompson.

Blue Duck (whio) at Manganui o te Ao River



The incredibly picturesque Manganui o te Ao River has extremely clean water flowing off bush-clad Mt Ruapehu, and along with the Retaruke and other smaller mountain rivers holds high numbers of whio. The Retaruke and Manganui o te Ao River catchments are one of eight security sites identified in the National Whio Recovery Plan (2007) as a priority for whio management.

Funded by the Central North Island Blue Duck Conservation Charitable Trust, this project was set up as part of a mitigation package between Genesis Energy, DOC and Forest & Bird during the resource consent renewal process for the Tongariro Power Development.

In 2002 a trial was run on the Manganui o te Ao River to formulate criteria for an intensive five-year project. It began with investigating the impacts of predator control on the whio population and testing a three-trap line model aligned parallel to the river.

Apart from losing chicks to natural threats and predators such as floods, harriers, falcons, and eels, predation by stoats is almost undoubtedly the number one threat to whio.

With the co-operation of local landowners and farmers for the first year of the project, one single river trap line was set up, servicing over 10 km of river. Monitoring and banding of adult and fledging juveniles was carried out to understand how the population changes over time and the effect that predator trapping was having. By the third year landowners had granted permission for the other two lines to be deployed.

When the trial finished in 2008, the focus shifted to more intensive trapping and less monitoring. DOC staff and contractors also spend less time monitoring the whio population now they are confident trapping

is providing the necessary protection. We are now at a point, where micro-chipping and banding of the birds as a permanent way of marking them is no longer necessary, reducing the stress of netting and handling the population.

Staff have an ongoing advocacy role with farmers, landowners and the local school, keeping them informed of the season's breeding results, whio management, and numbers of stoats and other predators caught.

Whio "open days" at Rautiti Domain through the summer, hosted by DOC staff from Whanganui and Tongariro, have proved very popular with locals and visitors alike. Manganui o te Ao River is a popular destination for many recreational groups. You can help by "checking, cleaning and drying" your gear to prevent didymo from reaching these pristine waterways, as well as leaving dogs at home. Fishers need to be very careful with lines and hooks, which must be removed from the waterway and surrounding area.

Please report any concerns to: Whanganui Area Office, Tel: +64 6 349 2100

Floating Wetlands help save Rotorua Lakes

Wetlands perform a vital function in reducing nutrients in water that passes through them. As well as protecting natural wetlands, one of the methods that the Te Arawa Lakes Trust and Environment Bay of Plenty are trialling for the Rotorua lakes is the use of constructed 'floating wetlands' to reduce nitrogen and, to a lesser extent, phosphate content in the water. A demonstration floating wetland has been established in Otautu Bay, Rotoehu and NIWA has been contracted to research the efficiency of nutrient removal.



The wetland is built onto a frame (module) made of recycled plastic and foam. The frame gives strength, rigidity, floatation and provides a suitable material for the plants to grow. Each module is 4m x 1.55m, but they can be joined or made into irregular shapes to make larger structures. They can be assembled at a suitable shallow water area and towed to the appropriate location and anchored. If necessary they can be relocated to different sites.

A range of native wetland species such as

Carex, *Cyperus*, *Schoenoplectus* and *Baumea* species are expected to work in floating systems. There is potential to use watercress or other plants that can be cropped to remove some additional nutrients from the system, but nitrogen removal is driven by the mass of trailing roots taking nutrients from the lake water and de-nitrification - that is, venting nitrogen to the atmosphere.

Removal of nutrients will help to reduce the amount of algae in the lake water and reduce the risk of toxic algal blooms, which annually leads to health warnings during summer.

NIWA's first trial was in cattle trough-sized enclosures, and the results indicated that nutrient reductions could be twice those achieved in natural wetlands. A further trial is under way in a shipping container at Rotoehu using water from a local tributary with a nitrate concentration of 2.5 g/m³. If this trial is successful, rafts of floating wetlands could be established to intercept stream waters entering the lake, following community consultation in a resource consenting process.

Kauri Park Nurseries in Kaiwaka (north of Auckland) market the floating wetlands as modular units. Te Arawa Lakes Trust (TALT) and Environment Bay of Plenty (EBOP) are currently preparing a resource consent application which would allow floating wetlands to be constructed and established on any of the Rotorua Lakes that are within the Lake Protection and Restoration Programme. The consent would allow for TALT and EBOP to assist other groups in the community to develop their own floating wetlands and play a part in saving the Rotorua lakes.

Nancy Willems, Environment Bay of Plenty





www.weedbusters.org.nz

Senegal Teal

Although Senegal tea (*Gymnocoronis spilanthoides*) is a very uncommon weed, it is one that is worth keeping an eye out for as it has popped up unexpectedly in wetlands and riparian areas in the past. This Central and South American import is of particular concern as, unlike alligator weed, it sets seed, making it much more likely to spread and much harder to control once it has established.

As with many other weeds of concern in wetlands and riparian areas, Senegal tea quickly forms dense mats of floating vegetation rooted in the margins of damp areas and waterways. It also scrambles over other plant species in these areas, smothering and crowding until it forms a monoculture. It is extremely hardy and tolerates a wide range of temperatures and conditions. It doesn't set much seed, but the seed it does set is long lived and well-dispersed in soil, water and movement of stock. Fragments of stem and root also form new plants.

Senegal tea has only been found in New Zealand in the northern areas including the Waikato. Any suspected sightings should be reported to the regional council.



What does Senegal tea look like?

Senegal tea is a perennial aquatic herb to one metre tall with finely fibrous roots and ability to also grow aerially from stem nodes. Hollow, inflated, floating stems (1-1.5 m long and 5-10 mm diameter at first, increasing to 20 mm with age) become prostrate and branching and take root at nodes. Dark green, slightly waxy, lance-shaped leaves (50-200 x 25-50 mm) are paired with opposite stalks joined at stem, and have serrated edges. From November to April, clover-like flowerheads are produced with many thin white 'petals' (florets), followed by yellow-brown seeds (5 mm diameter). Dormant over winter and dies back to rootstock if chilled, but resprouts in spring.

If you find it:

Report all sites to regional council or your local Department of Conservation office.

1. Dig out small sites (all year round): Dispose of plant material at refuse transfer station, or dry out and burn.
2. Weed wipe (spring-summer): glyphosate (500ml/L + penetrant).
3. Spray (spring-summer): glyphosate (20ml/L).
4. Stems and rootstock resprout and seed banks can re-infest bared sites, so follow up 3-monthly until this weed is eliminated. Don't graze the area, as stock will release fragments.

New Start for Fresh Water

On 8 June 2009, the Government announced its new strategy New Start for Fresh Water. It outlined the Government's new direction for water management in New Zealand and set out some of the choices we face and the implications of those choices.

The Government's strategy broadly covers the issues that need to be addressed (e.g. water resource limits, deteriorating water quality, balancing multiple uses) and the direction for water management that the Government wants to set.

Water management is part of Phase Two (in 2010) of the Government's Resource Management Act reforms that aim for least cost delivery of good environmental outcomes.

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delivery of good environmental outcomes.

The Government also aims to:

- ensure that water contributes to New Zealand's economic growth and environmental integrity
- provide stronger central government direction and leadership
- develop a water allocation regime
- identify the contribution water infrastructure (e.g. storage) could make to improve water use
- address some of the scientific, technical, information and capability gaps
- establish measures to address the impacts of land use intensification on water quality, and manage urban and rural demand
- maintain Treaty-based engagement with Maori on water management options.

A detailed work programme is still being

developed, but further work will be done on water quality, including managing the impacts of land use intensification, water quantity, particularly allocation and demand management, and water infrastructure and storage. Much existing work on water management tools will continue (such as the proposed National Policy Statement for Freshwater Management, some proposed national environmental standards).

A stakeholder-led collaborative process under the Land and Water Forum (previously known as the Sustainable Land Use Forum) will be used to develop a shared understanding of the issues and big picture outcomes wanted for New Zealand, and options for achieving those outcomes. The Land and Water Forum process will run over the next year or so and the Government will seek public comment before taking any policy decisions.

Summarised from www.mfe.govt.nz/issues/water/freshwater/new-start-fresh-water.html





Plant profile

By Monica Peters

Latin name: *Sparganium subglobosum*

Family: *Sparganiaceae*

Other names: *burr-reed, maru*

Status: *Not threatened*

Distribution: Found throughout the North Island though often scarce in many areas. Very uncommon in the South Island: found in Nelson, Marlborough, north Westland and on the Canterbury Plains. Found also in Australia.

Habitat: Coastal to lowland (up to 400 m a.s.l.). Usually an emergent in shallow water, often on the margins of ponds, lakes and slow flowing streams. Also found in fens, and within the lagg zone of acidic bog systems. Though it usually prefers sunny sites, it can also be found in moderately heavy shade e.g. found under willows.

Features: A very distinctive perennial herb of aquatic or fertile swamps. Leaves are smooth, rather spongy and/or firmly fleshy and range in colour from dark green to yellow green. Leaves are more or less erect, 0.3-1 m long, and up to 10 mm wide. Stems are usually

partially submerged in water, silt, mud or peat. At flowering, the plants can be up to 1 m tall. The inflorescence is rarely branched (See note below about the exotic *S. erectum*) can bear up to 20 flowering heads. The lower 1-6 are female (up to 18mm in diameter), the upper male (up to 15mm in diameter), and in season the white anthers are clearly visible.

Fruit: egg-shaped with a prolonged beak, dark green to yellow-green and approximately 6 x 3 mm.

Note: the exotic species – *S. erectum* – though similar looking has flowers produced on a branching spike. This species is considered a potentially serious weed as it can form dense stands, which could displace native wetland plants.

Flowers: September - April

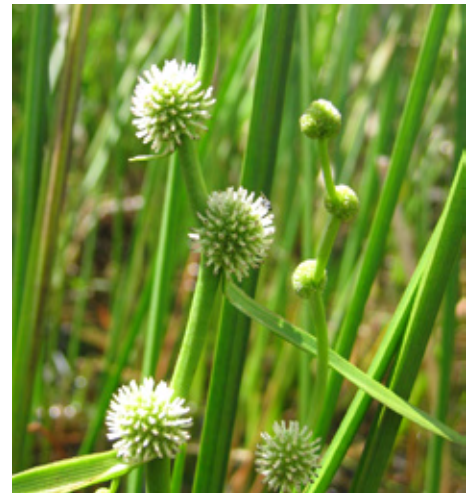
Fruits: November - May

Cultivation: Though not available commercially, burr-reed is easily grown from fresh seed or divisions from established plants. Grows well in full sun with roots submerged in e.g. a shallow pond or slow flowing stream. Can also be grown in partially submerged pots.

References: www.nzpcn.co.nz; www.niwa.co.nz

Image above right: Burr-reed female flowers

Image left: Burr-reed male flowers showing the conspicuous anthers.



Wetlands to visit

This is a new regular slot in our newsletter profiling wetlands that are accessible to the public. We are developing an on-line directory of wetlands people can visit.

Check out our website, and let us know of any wetlands we should add to our directory. **Contact:** karen.denyer@wetlandtrust.org.nz

Nukuhou Saltmarsh (Burke Road, Ohiwa Harbour, Bay of Plenty)

The Nukuhou Saltmarsh covers about 60 hectares where the Nukuhou stream enters the Ohiwa Harbour. In 2003 a local Care Group was formed and, with the help of the Department of Conservation and Environment Bay of Plenty, began

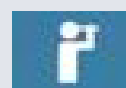


a significant restoration and interpretation project. Extensive plantings, weed and pest control, an overlook, interpretation panels, pottery bird plaques, a short boardwalk and a

contemplation bench have made this a pleasant place to enjoy the wetland and listen quietly for fernbird calls (a high pitched single note). Pest control has boosted fernbird numbers, as well as banded rail, Australasian bittern and waders.

Key features: fernbird, pottery bird plaques

For more info see: www.wetlandtrust.org.nz/Visting_wetlands.html





National Wetland Trust

The National Wetland Trust was established in 1999 to increase the appreciation of wetlands and their values by all New Zealanders. Our first major task is to build a wetland interpretation centre for people to learn more about wetlands and experience their special qualities. For more information visit our website: www.nationalwetlandtrust.org.nz

Other Trust aims are to:

- Increase public knowledge and appreciation of wetland values;
- Increase understanding of wetland functions and processes;
- Ensure landowners and government agencies commit to wetland protection, enhancement and restoration.

The trust has thirteen elected trustees representing: iwi, landowners, tourism and farming industries, local government authorities, Fish and Game Councils, the Department of Conservation, NGOs, Crown Research Institutes, and universities.

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