The Inlet

Newsletter for Guardians of Pāuatahanui Inlet

APRIL 2017

The Inlet is a newsletter that brings together local and regional news affecting the Pāuatahanui Inlet and its environs.

The Inlet comes out three times a year and current or back issues can be downloaded from our website.

The newsletter includes items of concern that affect the area as well as general interest topics for everyone.

Please contact us if you would like to contribute to ***The Inlet.***

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Inside this issue:

FROM THE CHAIRPERSON

In the last edition of the newsletter we featured an article about the storm that hit our area on 14 November last year. As we reported then, flooded streams and landslips resulted in a significant dumping of sediment into the Inlet and the Forest & Bird Reserve at Pāuatahanui was inundated, causing extensive damage.

This time we are happy to report, via our friends on the Reserve's Management Committee, that repairs to the buildings at the Reserve are now complete. However, this episode is still fresh in my mind, with the flooding in Edgecumbe last week and Tropical Cyclone Cook bearing down on Bay of Plenty as I write this.

Extreme weather events are not new to New Zealand. Tropical Cyclone Giselle in April 1968 is infamous for the Wahine disaster and in March 1988 Cyclone Bola caused 90 million dollars of crop damage in the Gisborne area. What is evident in more recent times is that these events are now occurring much more frequently. Last year the Parliamentary Commissioner for the Environment, Dr Jan Wright, said in reference to soil being washed into waterways, 'Climate change is projected to bring more intense and frequent heavy downpours which will exacerbate the problem'.

As we know from experience, Pāuatahanui Inlet is not immune to the damaging effects of these severe rainfall events. It is for this reason that I believe environmental planning, such as Te Awarua-O-Porirua Harbour & Catchment Strategy & Action Plan and compliance conditions attached to resource consents, must take into account the increasing volatility of our climate and the projected frequency of extreme weather events.§

Tony Shaw

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AN OBITUARY FOR TWO GREAT MEN

It has come to our attention that 2016 was sadly marked by the passing of two people who were very important to the development of the Pāuatahanui Wildlife Reserve from its beginning and for the best part of 30 years.

Ron Freeston put his engineering background to use in the first years of the development, including design and construction of the ponds and tracks that are an integral part of the Reserve.

Stan Butcher was highly involved in other conservation projects for which he was a leading figure. Stan's knowledge of plants was encyclopaedic and therefore invaluable in his work with the Reserve.

Both these men also took part in the planting that took place on Matiu/Somes Island at the same time as helping out at Pāuatahanui. Stan was instrumental in ensuring that the Bushy Park Reserve remained available to the public during a time when there were pressures to see its future compromised.

Both will be sadly missed by all who have been part of the Wildlife Reserve over the years.§

Stan Butcher (left) and Ron Freeston at Pāuatahanui Reserve

PHOTOGRAPHIC COMPETITION 2017

By the time you read this the Photographic Competition date for entries will have just passed, so if you haven't submitted your entries by now it will be too late to do so. All entries will be sorted and prepared for our judge, Geoff Marshall, to view and select the winning and highly commended entries, and the presentation of the results, and prize giving to the successful entrants, is set for Saturday 20 May at the Helen Smith Community meeting room, Pataka, in Porirua.

We were sorry that the Junior Workshop to be held at Pāuatahanui had to be cancelled this year. The weather on the day was so wet that, even if all the children could make the seminar held at the school, the conditions around the wildlife reserve would have been very unpleasant and the lighting not conducive to good photography. It's the first time this has affected the workshop so we hope for much better luck next year.§

FERN BIRDS IN PAUATAHANUI INLET

In December we reported on a plan by Pāuatahanui Wildlife Reserve management team to bring fernbirds to the wetlands of Pāuatahanui. At that stage it wasn't certain if this project would go ahead but now we can give you the good news that it is about to come to fruition.

First, a little bit of background information about this bird.

The fernbird, *Bowdleria punctata,* is an insectivorous perching songbird unique to this country. It is sparrow -sized, rather dull in colour, and inhabits wetlands throughout New Zealand. It has an unusual, somewhat tattered tail. The birds are not often seen, but can be heard and have a distinctive call.

(If you are reading this from a pdf on computer/tablet/mobile you should be able to link to the following:

http://www.nzbirdsonline.org.nz/sites/all/files/28%20-%20Track%2028.mp3)

Unfortunately the fernbird is on the decline and while, it was once widespread throughout New Zealand, it is becoming rare. It has disappeared from many areas including Wellington where it hasn't been seen for many years. So, it would be great to have a breeding population in our reserve to bring it back to the region.

Efforts have already been made to establish breeding colonies where suitable habitats exist and one of these is Lake Rotokare Scenic Reserve, east of Eltham in South Taranaki (http://www.rotokare.org.nz/).

In this community-led sanctuary the fernbird is now thriving and from there it is hoped to capture a number of birds to transport down to Pāuatahanui Wildlife Reserve **this month**. The expected dates for the relocation exercise are 19-24 April, so the project may have been completed by the time you read this.

North Island fernbird. Tokaanu, Lake Taupo, Waikato, September 2009. Image © Neil Fitzgerald by Neil Fitzgerald: www.neilfitzgeraldphoto.co.nz.

(Reproduced from NZ Birds Online (http://www.nzbirdsonline.org.nz/)

The logistics of the programme are considerable as it is unknown how many birds can be captured each day. Nets are used for this task but it is weather dependent and they don't take to the wing in bad conditions. Also, to keep stress to a minimum, they will need to be transported to Pāuatahanui on the day of capture and released in the reserve before sundown. Release will be somewhere in the middle of the reserve. They are shy birds and will scurry for shelter as soon as they are freed but then may scatter far and wide looking for familiar territory. It is not known if they will stay within the reserve boundary or move outside it. Hopefully some will settle because the habitat and vegetation are ideal for their existence.

We will keep you informed of the success of this project in the next issue.§

More about fernbirds can be found here: *http://www.nzbirdsonline.org.nz/species/fernbird*.

PHT SCORECARD 2016

The Porirua Harbour Trust has completed the fourth comprehensive 'State of the Harbour' Scorecard that reports on the progress aimed at arresting the decline of harbour conditions and returning it to a healthy, resilient state. The report covers the year ending August 2016 and is based on scientific data and reports from the Greater Wellington Regional Council.

Each year the scorecard maps and assesses five indicators related to the harbour and its catchment. The scores 1 to 5, where '1' = *Bad* and '5' = *Excellent*, are designed to highlight changes in key aspects of harbour and catchment quality and to give an indication each year of progress measured against the *Porirua Harbour and Catchment Strategy and Action Plan*. The five indicators are:

Agency Action, Sedimentation, Education and Recreational Usage, Ecological Health and Waste.

The major concerns identified in this latest report are (a) the ecological health problems of the harbour and its streams - particularly the Porirua Stream, (b) the increased level of fine mud in the Pāuatahanui Inlet, and (c) the water quality of our swimming beaches.

a) The future health of the harbour is driven to a very large extent by the health of its streams but, unfortunately, recent monitoring indicates that stream health is not improving and streams in the Porirua catchment continue to languish in the bottom third for of all streams in the Greater Wellington region.

The Horokiri Stream has the highest rating for ecological health of all the catchment streams; it gets a *Good* rating for 2016. The Pāuatahanui Stream gets a *Fair* rating, as does the Porirua Stream. Both are causes of concern and need to improve.

Ecological health of Pāuatahanui Inlet is in the middle of the range and needs to improve. It scores a '3' whereas the Onepoto Arm earns a '4'. Run off from the predominantly rural catchment, and from roads, needs to be better managed. The ongoing work of Transmission Gully as it is built, and ongoing land development in the catchment, will be the big test in the next few years.

b) The Trust has given the highest, *Excellent,* score for the overall rate of sedimentation of the Harbour, which is currently some 1.1 mm/year. The Pāuatahanui Inlet shows rates of -2mm/yr to +2.2mm/yr for its intertidal and subtidal areas respectively. This does not include the effects of the November 2016 high rainfall event. (*Subtidal* covers the area below the range of tidal movement while *intertidal is* the area exposed at low tide and submerged at high tide).

This measurement also does not distinguish between the fine mud that gets distributed in, and via, the water column and the other coarser sediments. Fine mud – which eventually settles and causes problems by limiting oxygen to marine life – currently comprises some 62% of subtidal sediments in the Inlet and (fortunately so far) a range of only 2 - 16% of sediments in the intertidal zone. The Kakaho and Horokiri intertidal areas are the worst affected, showing mud proportions of 16% and 11% respectively. For the reporting year Duck Creek shows a low of 2% mud. Even if the overall sediment rate can be maintained at 1 - 2mm/yr, reducing the fine-grained mud component from catchment run-off is important and will be a particular challenge given the potential impact of the predicted land disturbances that will occur in the immediate years ahead.

[Note: *While the measured 2016 mean sedimentation results for the Inlet are very good at a mean of .1mm/yr across all 11 measured sites, sediment measurements vary considerably from place to place and year to year. Within these measurements are the troublesome increases in soft muds. Sediment, and related soft mud, moves around the Inlet and, since 2013, the mean annual*

PHT SCORECARD cont…..

sediment rate has been -7.7mm/yr (a reduction) for the intertidal areas but +23.4mm a year for the subtidal areas. The worst subtidal areas are those stretching outward from the Kakaho and Horokiri streams, suggesting that rural and forestry land uses are the sources of this sediment. The urban streams (Duck Creek, Bradeys Bay and Browns Bay) have recorded very low, or negative, intertidal and subtidal rates since 2013. Duck Creek is the worst of these having a mean of 2mm/yr since 2013 but reflecting a peak of 14.8mm/yr in 2014 down to 1.8 mm/yr in 2016].

Algae are now evident at the mouths of the Pāuatahanui and Horokiri Streams – caused by nutrients entering the harbour. Combined with fine mud these will eventually cause a nuisance but, so far, things haven't degraded to the point where smells and black ooze are dominant or often noticeable.

c) In terms of recreational water quality the good news is that the swimming water quality of the Inlet at the bridges is improving and is rated as a '4' (i.e. *suitable for swimming most of the time)*. The quality at the Water Ski Club area is less and is rated as '3' (i.e. *generally suitable for swimming with care).* By contrast, Plimmerton Beach gets a low rating of '2' and is deemed *not always suitable for swimming.* Karehana Bay, however merits a '4'.

Recreational groups were surveyed and they rated their experience on the water as *Good*. However, their views on water quality received a lower rating of *Fair*. Overall the trust has rated the recreational usage as *Fair*.

Recreational users are concerned about the increase in sedimentation, especially the shifting and growing sand banks. They have to be alert in respect of the areas they use in the harbour and about water quality generally, especially after storm events that bring in large amounts of debris around the shoreline.

It is clear that the joint councils are working hard to implement the harbour strategy and they have operational plans in place to arrest the state of decline in the catchment. The Whaitua process (run by Greater Wellington Regional Council) will end up modelling the entire catchment and harbour and setting limits for water *quality* and *quantity* in the streams and harbour.

Overall, when considering the longer term data available to the review team, the results show generally positive and progressive actions and improvement in harbour quality and condition over the last decade – with three notable exceptions:

- the recent readings across the three key streams in the catchment, both for water quality and ecological health, show no improvement in stream quality and this is of concern in the longer term as the quality of the harbour is heavily dependent on the water flowing into it from the catchment.
- significantly increasing amounts of soft fine mud being deposited in parts of the harbour and particularly Pāuatahanui Inlet subtidal areas.
- generally poor water quality for swimming at the beaches and shellfish gathering areas with three of our top beaches being given a 'Poor' rating. This means that water quality is not always suitable for swimming.§

The full report is available on the Porirua Harbour website www.poriruaharbourtrust.org.nz

SEA GRASS PILES HIGH

If you have been taking the air along Camborne Walkway recently you may have been confronted by a striking amount of fresh seagrass washed up all along the high tide line. Several people have commented on this so we decided to make some enquiries with environmental experts on the phenomenon to help explain what was happening here.

(The images below show this phenomenon viewed on two separate days).

Photo: Tony Shaw

According to Dr Megan Oliver*: '*This is the normal die-off of seagrass that happens at this time each year. I have seen similar at Ivey Bay so perhaps recent wind conditions have washed the material up on this shore. Typically the northerly would blow material onto the southern shores so maybe there has been more southerlies recently?*' This is something the editor can testify to, living in a Whitby locality that channels both northerly and southerly storms through a valley. The predominant wind in recent weeks has been from the south.

Dr Fleur Matheson** has also experienced this phenomenon. She says: '*It's common to see a lot of seagrass wrack washed up in autumn. I've certainly seen this sort of thing in Tauranga Harbour. I actually think it's a positive sign as you clearly have some nice lush seagrass beds nearby judging by the condition and amount of the wrack.*'

Photo: Tony Shaw

So it seems to be normal at this time of year for the meadows of seagrass, as well as algae, to have reached rich growth after a period of good temperatures and calm weather. As John Wells*** points out, this growth surge makes the plant '*vulnerable to high seas and strong winds*', the normal weather pattern after a calm period. As a result, plants break off and pile up on the shore driven by the wind. John says, '*It is not an indication that there is something wrong or weak with the grass, only that superabundance may well have produced plants with weaker grip on the sand/mud because of competition*'.

Judging by the experience of observers to this event it is particularly prominent this year and hence more noticeable than normal, but in no way unusual as the die-off, to some extent, occurs every year.§

**Dr Megan Oliver is the Team Leader, Aquatic Ecosystems and Quality, GWRC.*

***Dr Fleur Matheson is an Aquatic Biogeochemist, working with NIWA*

****John Wells is a former Chair of GOPI, and retains a position on our committee as Science Officer.*

WE SAY GOODBYE TO MARY

It is with regret that GOPI has to accept the resignation of Mary Dinniss.

Mary has found that the Forest & Bird Reserve work which she also undertakes every week, consumes so much of her time she has had to make the decision as to which organisation she will continue to support.

Since the GOPI committee has been greatly strengthened by the arrival of the members from PICT Mary feels that she can make more of a contribution to the F&B committee. From the view point that the reserve management is something GOPI would naturally support, we agree with her decision. Fortunately she is happy to continue with the Duck Creek restoration if it does go ahead (see below).

We reluctantly accept Mary's resignation, thanking her for the contribution she has made to GOPI, and wish her well in her continued work in the area. §

DUCK CREEK RESORATION ON HOLD

Some time ago (*The Inlet, April 2016*) we reported on the planned restoration of vegetation at Duck Creek Reserve at the bottom of James Cook Drive. At the time the Duck Creek Community Care Group, lead by Mary Dinniss, thought it a timely action due to the planned development of the land just above stream, and the building of five houses there.

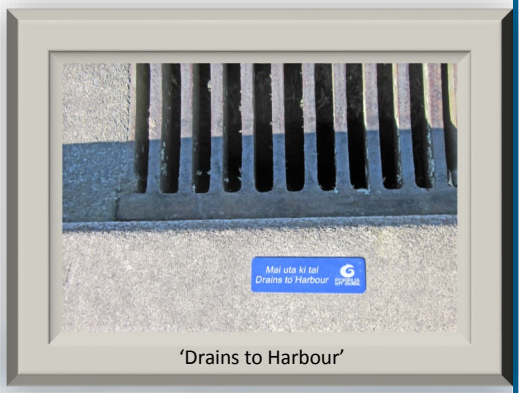
As luck would have it the contractors for the housing development got in first, constructing a bridge across Duck Creek estuary for a road into the otherwise isolated area of land. Access for the contractors, until the road bridge is complete, is via the PCC right of way just to the west of the reserve, and the Care Group is not allowed along this route while it is being used in this way. Restoration work, therefore, has been put on hold and at this point in time it is unknown when that situation will change.§

'DRAINS TO HARBOUR' PROJECT

A new initiative designed to help protect the harbour from pollution of its waters by careless activities has been created by a partnership formed between Porirua City Council and Wellington Water.

Markers with the message 'Drains to Harbour' will be attached to street drains throughout Porirua City. The markers are metal plates designed to be affixed to the curb by anyone following a simple set of instructions. The plan is to encourage members of the general public to support this initiative by installing markers beside the street drains in their local suburb.

The project began in Takapūwāhia where Te Rūnanga O Toa Rangātira facilitated installing the markers. If you visit this suburb, everywhere the drains are now signposted with this marker. This picture shows how the marker is displayed.



'Drains to Harbour'

We at GOPI applaud this initiative and are very happy to be facilitating it in Whitby. For that reason we are eager to see if any members of our group and their friends who live in Whitby would like to be involved by placing markers where they have drains in their street or neighbourhood.

If you are interested please let us know by contacting us at pauainlet@gmail.com. We will arrange to distribute the markers and glue equipment as required.§

FEATURE ARTICLE

You may be surprised to know that, beneath the calm waters of Pāuatahanui Inlet, there is lurking a species of shark that can attain a length of 1.5 meters when fully grown. It uses the shallow, sheltered waters of our harbour as a nursery, gathering throughout the months of October to March to mate and give birth. It is not one of those large, dangerous, species that are the subject of books and movies but, instead, a commercially very important fish that most of us will have made part of our diet at some time in the past.

The Rig Shark

Rig is a shallow water shark of the smooth-hound genus, *Mustelus*, of which our species – *Mustelus lenticulatus* is otherwise known as spotted estuary smooth-hound.

Photo: Malcolm Francis

This shark is only found in New Zealand but is very common throughout our coastal waters, particularly in shallow bays and estuaries. Generally bronze in colour on the upper surface, with numerous blue and white spots, it is characterised by having two dorsal fins and an anal fin. The bottom surface is white. The teeth are flattened and arranged like paving stones to form grinding plates designed for crushing. The rig feeds mainly on animals that burrow in the sea floor, especially Crustacea such as crabs. The main diet is the species *Hemiplax hirtipes, (*stalk-eyed mud crab), constituting up to 95% of the total taken, with *Austrohelice crasa* (burrowing mud crab) making up most of the rest. Feeding is accomplished by sucking up mouthfuls of sea floor sediment containing the burrowed animals. The shark separates out the prey by ejecting the mud and sand through its gills, leaving the animals behind to be crushed and swallowed.

This feeding habit also enables a rig to maintain respiration without the need to keep moving, as is the case with many sharks. Unlike its relatives of the open sea, the rig can keep the flow of water moving over its gills while remaining relatively still in the shallow waters of the estuaries.

Sharks can sense the presence of prey using the sensitive Ampulae of Lorezini, a collection of tubules that open to the sea by small pores located around the snout. This organ is electrically sensitive to the muscular activity of the small Crustacea helping the rig to locate a buried population of invertebrates with little difficulty.

During the much of the year most adult rig spend their lives in open waters, hugging the seabed, but during spring and summer, mature adults, 4-7yrs old, make inshore migrations, congregating in sheltered, shallow, harbours and estuaries to spawn and mate. Pāuatahanui Inlet is one of the most important such spawning grounds in central New Zealand and the overall population of rig is estimated to be between 4 and 6 thousand individuals over the course of a year, peaking during the summer months.

FEATURE ARTICLE cont….

Unlike many shark, rig are viviparous, that is they give birth to live young with the eggs maturing within the body of the female over a period of 11 months after fertilisation. The young are born at a size of 20 to 30cm, with each female producing an average of 11 offspring. This occurs during the months of October to December with the new-born fish staying in the Inlet, possibly through to April or June. The young grow rapidly, reaching maturity in 5-8 years, with a natural lifespan of over 15.

After spawning, adults remain in the harbour to mate during the remainder of the summer months and it is known that several males can mate with one female, i.e. they are polygamous. By the end of February most adults have returned to the open sea. During the next spring males tend to return to the same estuary and, therefore, are local to the Inlet, while females can come from a wider area of the coast.

As part of New Zealand's coastal ecology, rig shark is a highly important inshore commercial fish species, less prone to overfishing than most shark. You will probably know it as 'lemon fish' and, under this name, have eaten it as the ubiquitous serving of 'fish and chips'. 'Spotted dogfish' is another common, but false, identifier as true dogfish are a different order of shark. Rig are taken mainly by set net and bottom trawl and there are six managed stocks of rig around New Zealand shores with three within 40km of Porirua harbour. This makes Pāuatahanui Inlet a highly important spawning ground for rig. Yet, despite its importance to the fishing industry, migratory movements of this shark have been poorly understood in the past and it has been difficult for the fisheries to be managed optimally.

To this end, Warrick Lyon (Institute of Marine Science, Auckland University, and Research Technician, NIWA) has been conducting research into population patterns over several years, throughout the spawning season. A technique using 'mark-and-recapture', with GPS technology as the primary tracking method, has been developed by Warrick and Peter de Joux of NIWA with the intention of monitoring rig in real-time with fine-scale accuracy. This is a world first as previous research has used acoustic receivers only and these are not as accurate in providing locational data. For the new research technique a GPS receiver is attached to one dorsal fin of a shark via a 7m monofilament so that it floats on the surface of the water and continuously records position. The information is then relayed to a number of receivers placed around the Inlet that pass the data to a land-based computer. At this hub the information is collated and analysed. Much of the information gleaned by this research has gone into the above description of the rig's lifestyle, an achievement that has been made possible with financial support given by NZ Marine Research Foundation.§


Photo: Warrick Lyon

More information can be found on the website: http://www.sharktrack.org.nz/rig-sharks

ANSWER TO FAMILY CORNER

Orange Roughy; Black stilt; Sphagnum;

FAMILY CORNER

THE ODD ONE OUT

Here is a easier activity than that found in recent issues of the Inlet. - *The Odd One Out*. We have listed several plants and animals below in three groups. Four names are given in each category but one of the four is the odd one out because it is not found in or around Pāuatahanui Inlet. Can you pick out which one it is in each case?

Fish

- Inanga
- Rig
- Orange Roughy
- Yellow-eyed mullet

Birds

- White Faced Heron
- Spoonbill
- Red billed gull
- Black stilt

Plants

- Sphagnum
- Glasswort
- Ribbonwort
- Sea rush

The answer is to be found on page 9

PLEASE SIGN UP A FRIEND OR NEIGHBOUR

Sign up a neighbour, friend, or another family member. Just explain to them that membership numbers really count in giving us a strong voice to argue for what we all value about the Inlet. Membership forms can be downloaded from our website http://www.gopi.org.nz/assets/membersForm/Membership-new.doc or copied from the one at the back of this newsletter. Better still, if you've received this newsletter by email, just forward it to others with a note encouraging them to join.

EMERGENCY NUMBERS FOR THE PĀUATAHANUI INLET

Pollution: Discharges of contaminants to air, land, storm-water drains, streams, rivers or sea and for after hours consent enquiries: Greater Wellington 0800 496 734 (24 hours)

Boating infringements: Greater Wellington 384 5708 (24 hours)

Illegal fishing activity: Ministry for Primary Industries 0800 476 224 (24 hours)

Pāuatahanui Wildlife Reserve: Department of Conservation 0800 362 468

Let us know what you have reported so we can keep an accurate record and follow up if necessary.
233 9391 (Chairman, GOPI) or **pauainlet@gmail.com**.

Guardians of Pāuatahanui Inlet

www.gopi.org.nz
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