



The Inlet

Newsletter for Guardians of Pāuatahanui Inlet

APRIL

2020

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:

- Photographic Competition Postponed 2
- Youth Photographic Workshop 2
- A call to our Membership 3
- We Welcome Alistair 3
- Uneaten Fruits 4
- FEATURE ARTICLE - Food Web of the Inlet 5
- Restoration Day 9
- Emergency Numbers 9
- Membership Form 10
-
-

FROM THE CHAIR

In these times of lockdowns the normal round of activities has been stopped or slowed down. However, just before we went into lock down, GOPI put forward a project application to the DOC Community Fund. The application involves restoration and enhancement, with planting and pest control, on coastal edge margins of key habitat areas of the Inlet. The project is supported by Porirua City Council and will involve significant community volunteer input.

We have applied for a three-year project which will cost upwards of \$200,000. The plan is to carry out coastal edge planting at Kakaho Estuary, Motukaraka Point, Camborne Walkway, the Horokiri Estuary, along the Te Ara Piko Walkway and in Ivey Bay and Browns Bay. If successful, it should result in increasing improvements to the Inlet ecosystem in areas where degradation and weed invasion have occurred. These improvements should help return the Inlet to a more healthy state. We should know the result of our application in July, but that depends on DOC's ability to process it by then.

Thanks are due to Andre van Halderen and Alistair Webb for developing the application, and to Nigel Clarke from Porirua City for a lot of work on the idea and detail for the proposal.

The Feature Article in this newsletter is well worth a read. It sets out the intricate and interconnected nature of the food web of the Inlet ecosystem. It is this very food web that our application to the DOC fund aims to enhance.

Let's hope that, as the year progresses, we can return to a more normal round of activity. Meanwhile, keep safe and keep well.



PHOTOGRAPHIC COMPETITION CANCELLED

For the first time in its history we've had to announce the cancellation of this year's Photographic Competition due to the extraordinary circumstances surrounding the global Covid-19 viral pandemic.

While full lockdown is in place no community activity is allowed and, with the uncertainty surrounding the long-term lifting of restrictions, we cannot anticipate a time later in the year when we will be able to resume normal activities. A long delay would make postponement of the competition impractical as it would then be only a short time before we would begin the process all over again in 2021. Therefore we have decided to end all further activity towards this year's event.

Be assured that any photographs already taken by prospective entrants can be kept for submission next year.

Sponsors for this year will be contacted in due course and their contributions treated in accordance with the wishes of each company.

YOUTH PHOTOGRAPHIC WORKSHOP

For several years now we have run a free tutorial for budding young photographers keen to learn about the skills required to capture exciting images in their cameras. The three-hour long workshop consists of a visual classroom tutorial, held at the Pāuatahanui Wildlife Reserve's Stout Cottage, followed by an excursion into the Wildlife Reserve itself to put into practice what was demonstrated in the class.

Each year the tutorial has been given by Destina Munro, a long-time member of Kapiti Camera Club and lecturer in photo-journalism at Victoria University.

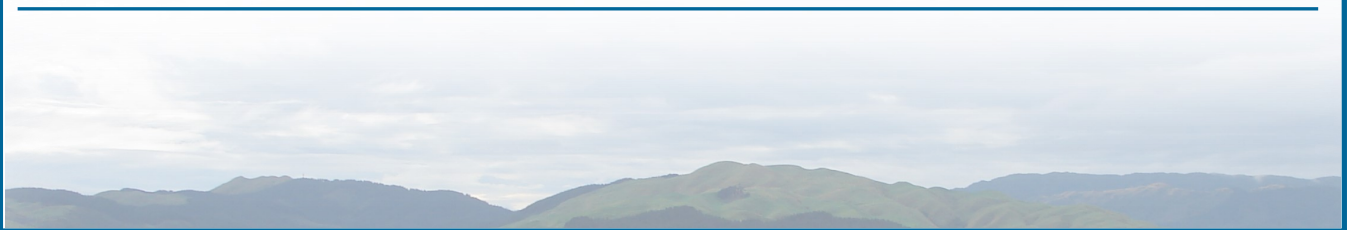
This year was no exception and Destina presented her illustrated talk to nine keen under-18 youngsters, two of whom had also attended in previous years.

This initiative has regularly produce winners in the

annual Photographic Competition with Highly Commended images frequently in the mix.

The editor attended the workshop this year to provide logistical support and was impressed by the work created by these young photographers and the excitement shown in taking part. They have so much imagination at that age that nothing seems to be out of bounds for the creative mind.

Thank you Destina for your ongoing dedication to this very valuable and generally successful event. We are hoping to continue this initiative in the future.



A CALL TO OUR MEMBERSHIP

The year ahead is going to be challenging for everyone, including the Guardians of Pāuatahanui Inlet as we take on new initiatives for 2021. As explained in the introduction to this issue of *The Inlet*, an application has already been submitted to the DOC Community Fund for financial support of a project that will involve restoration and enhancement of the coastal margins of the Inlet. This will include planting and pest control in a number of key habitat areas named in the submission and supported by Porirua City Council.

As well as this initiative, we already hold an amount of money given to us by various supporters to use for smaller habitat improvements where we can identify such a need. We have already given some thought to this task but, rather than come up with ideas from within the committee alone, we would like to extend an invitation to our membership for suggestions that can be put into practice.

Any way that you can think of to improve the Inlet and its coastal margins would be considered and perhaps more than one selected. So if you think a particular idea is worth attention please submit your thoughts by email to pauainlet@gmail.com.

WE WELCOME ALISTAIR WEBB

Alistair Webb joins the GOPI committee this year as a co-opted member to contribute to the work undertaken by the team.

‘Together with my wife and son, I’ve been a Whitby resident since 2015, living close to the Pāuatahanui Village. We enjoy the walkways around the suburbs surrounding the Inlet and through the Pāuatahanui Wildlife Reserve.

I grew up in Tawa and studied at Victoria University graduating with Science (Ecology) and Commerce (Economics and Commercial Law) degrees. Since 2007 I have worked for the QEII National Trust as a land protection advisor which involves protection and enhancement of natural areas on private land across the country. The work is particularly interesting as it brings me into contact with some great practitioners around the regions and with inspirational landowners who represent some of the best NZ has to offer in terms of custodianship of our natural environment.

I have been a member of Pest Free Whitby since 2017 and enjoy creating safe garden spaces for our local lizard species.

I am looking forward to helping support the important advocacy and community work of GOPI.’



UNEATEN FRUITS – More harm than good

Do you throw your apple cores and banana skins into the bush – to decompose into the natural world? Well, if you do (and you are not alone), we would like to discourage you from this practice.

Many of us are unaware of the harm organic waste can do to the wildlife of New Zealand when it is thoughtlessly thrown away into the bush. By doing this, we may be unknowingly contributing to several problems. It seems harmless enough but this casual action could be negatively impacting our native species.

There is a world-wide myth that discarding organic waste is harmless, or even good for the environment. It seems plausible enough, doesn't it? But nothing could be further from the truth, particularly in New Zealand.

The myth is that apple cores or fruit peel break down in the environment. Well, they may do so - but not for a long time. In good conditions an apple core may break down in 2 months; in poor conditions, however, such as an alpine track, it may take many years.

It is also thought that any fruit such as apple is a natural food source. Well, this is very far from the truth in an environment where it does not grow naturally. A recently reported example of the impact that can occur is with our native parrot, the kaka. The bird just loves the taste of corn, and also various nuts, and because of this, these are the foods given to them by well-meaning humans to attract the birds to feeding sites. But these 'foods' lack the nutrients the bird needs, in the proportions that evolution has dictated they will find in nature. Consequently chicks from mothers fed on corn develop malformed bones and beaks, due to a calcium-phosphate mineral imbalance. In

addition, the adults get obesity problems by consuming too many nuts which are full of oils. The birds' natural food source will take them time and effort to tackle, and they can't over-eat. Human treats are the opposite. Any exotic fruit can have similar outcomes.

A third, and significant, myth is that the apple core won't harm the environment. This seems totally logical, because it is, after all, biological. However, an indirect and potentially serious side effect results from this idea. Discarded fruits that are not native to our country are loved by the introduced rats and mice, etc. These pests will find our leftovers very tasty, and a crowd of tourists leaving behind their uneaten food scraps results in a store of additional, easy to consume, nutritious food for our predatory, but omnivorous invaders. They thrive and multiply on the additional supplements, and this puts ever more pressure on our unique native wildlife. It's in direct opposition to our aim for a Predator Free New Zealand in 2050.

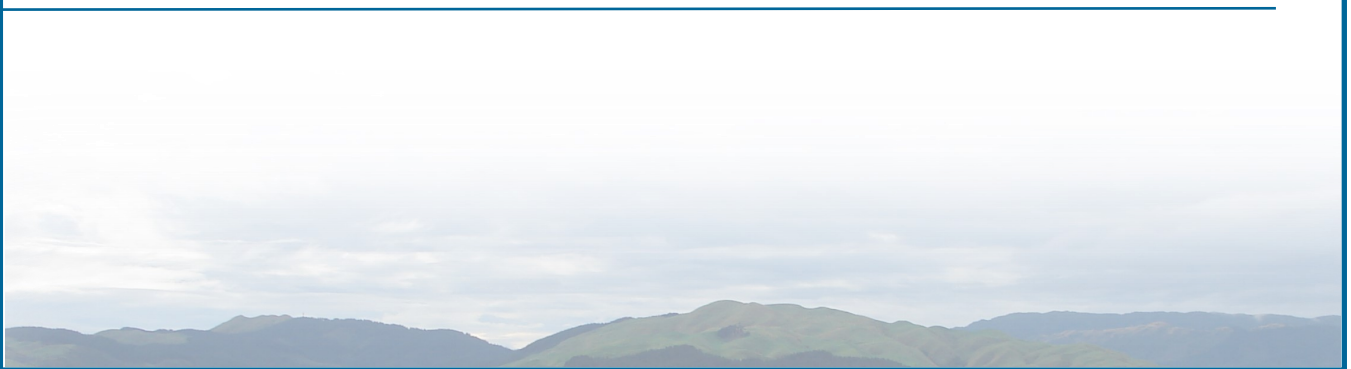
So please: DON'T DO IT!

This summer the Department of Conservation is asking visitors to public conservation land to [Love This Place](#). This is a nationwide effort to engage domestic and international tourists in responsible behaviour while travelling through New Zealand.

Take all your litter with you – even apple cores and banana peels – and leave only footprints.

This article was based on DOC's Conservation Blog:

[What your apple core can do to our native-birds.](#)



FEATURE ARTICLE

In the past we have included articles on various species found in the Inlet, like the cockle, the mud crab, seagrass and black swan. While the biology of these organisms has been previously explained in some detail, particularly noting what they feed on, there has only been a limited discussion on how they fit into the whole picture of Inlet life.

In the following article we take a more holistic approach to the ecology of our harbour by looking at the inter-relationships of the many species to be found within and around the waters of Pāuatahanui Inlet. The subject is highly complex so we can only give a summary of the various species' dependencies but hope it helps to tie together some of the important associations that are present in this valuable habitat.

FOOD WEB OF THE INLET

Food webs are the complex nutritional inter-dependencies of living organisms where one species feeds on another while it in turn is consumed by other species. This often begins with more 'primitive' species, like bacteria or simple plants, linking through more complex organisms to culminate in carnivorous species at the top of the food chain. A simple food-web would be bacteria – invertebrates – fish – birds with, possibly, humans at the top.

Ultimately all life on earth is dependent upon the energy of the sun for its existence, either directly or indirectly, and therefore a look at a food web must naturally start with those species that use sunlight to assimilate the basic compounds of life to build bodies and drive life's processes. These are the green plants, their colour being due to the presence of the pigment chlorophyll within their cells. Unicellular diatoms and other micro-algae, seaweeds, seagrass, reeds and rushes, all use light to convert water and carbon dioxide into simple sugars, amino acids and fatty acids, and in the process give out oxygen. Cyanobacteria, once called blue-green algae, are another group of simple organisms that trap sunlight but, in their case, use alternative photo-active pigments.

The Inlet is full of these plants. Microscopic phytoplankton (unicellular algae and cyanobacteria) live in the upper layers of the water. Other unicellular algae live in and on the sea floor sediments. These and larger macro-algae attach to rocks, to blades of seagrass and to other surfaces around the harbour's subtidal areas. More evolved plants such as seagrass, form submerged 'meadows' on subtidal sandbanks, and various salt-tolerant plants grow in the marshes around the harbour edge. All contribute to the astounding array of plant life that exists here, albeit less conspicuous than the dominant forests in other parts of New Zealand.

The growth of plant species is dependent on nutrients in the water, such as nitrates and phosphates, washed into the Inlet from the land, the by-products of forest and animal life that colonise it and, of course, human agricultural activities. Single-celled and filamentous algae are highly dependent on these basic compounds for growth: too little and they would diminish in quantity; too much and they multiply out of all proportion, resulting in 'blooms' that can smother other plants, extract excess oxygen and even produce toxins that can kill.

All these plants support other organisms in various ways. Black swan, for instance, feed directly on seagrass. Here, a dominant species is directly supported by an advanced green plant in a very short food chain, but most food webs are much more complex than this.

Juncus kraussii, also known as *J. maritimus* or sea rush, is one of the most important plants in the Inlet. It forms extensive meadows at the margins of saltmarsh at the eastern edge of the Inlet, its roots needing a daily cycle of 4 hours tidal inundation for vigorous growth. When conditions are optimum, the plants produce hundreds of semi-submerged stems which, when they die off, break into pieces and decay into the



Feature Article cont.....

muds of the saltmarsh floor. The twice-daily tidal flows help to move this material into the Inlet itself where it settles on the sea floor. Seagrass and sea lettuce add to this material on a seasonal basis. The material so formed is the food source for bacterial decomposition and a whole range of detritus feeders, the most important members of the intertidal and sub-tidal fauna.

Mud snails, mud crabs and wedge shells graze on the surface of the mudflats while a much more numerous and largely unseen community of bristle worms and nematode threadworms burrow in the muds, feeding on the decaying plant material. Bristle worms in particular, marine versions of the earthworm, are present in enormous numbers. Also found in the sands of the subtidal areas are millions of copepods, tiny crustaceans that feed on the bacteria, algae and detritus found there. These were the subject of our former Chair, Professor John Wells' research work during his time with Victoria University of Wellington.

Another part of the food web begins with the phytoplankton, unicellular algae that float in the surface waters absorbing sunlight to drive photosynthesis. Sometimes the enormous quantities can be seen as green streaks just below the surface. Swimming among them are the zooplankton - myriads of tiny animals, and the larval stages of many invertebrates including copepods, snails, worms and crabs, all feeding on the plant cells and on other zooplankton.

This organic 'soup' is the food source of probably the most abundant inhabitant of the intertidal flats found in the Inlet - the New Zealand cockle. *Austrovenus stutchburyi*, a mollusc found buried just below surface sediments between low and high tide, is the shellfish that GOPI counts every three years. When tides are in, these animals draw through a constant flow of water from which they filter out the planktonic organisms for food, expelling the water again along with their own waste products. They are so numerous it is estimated they filter half the volume of water that enters the Inlet during each tide cycle. Being dependent on the plankton for survival their numbers are a good indication of the health of the Inlet.

Some larger animals also rely on the plankton to survive. One is the anchovy which draws water through its sieve-like gills to separate out the tiny organisms. Pilchard is another of these while the sea horse, living among seagrass, sucks in floating copepods and other small crustaceans.

Another important habitat in the Inlet is based on the seagrass 'meadows'. While not a true grass, the grass-like leaves are home to a whole community of plants and animals. The leaf surfaces are coated with microscopic algal cells and these attract grazing invertebrates, particularly the gastropod snails. The 'meadows' also shelter many small invertebrates that feed on algae and decaying leaf matter, and the young of various fish then feed on these. The leaves are used as an anchor point for seahorses feeding on tiny free-swimming animals while the leaves themselves are food for ducks, geese and swans. So a whole community of organisms rely on this habitat for their survival and sustenance.

Pāuatahanui Inlet's extensive food web is based mainly on the detritus and filter feeders. These small animals are vital for the transfer of the sun's energy, captured in plants by photosynthesis, to larger animals found in the waters and on the shores of the harbour.

The first tier of invertebrate carnivores includes the whelks, sea anemones and starfish. Sea anemones catch zooplankton in their tentacles, while the whelk and starfish feed mainly on the cockles and other bivalve shellfish. The whelk drills into the shells to suck out the soft tissues, while the starfish forces apart the shells and everts its stomach to digest the contents.

The second-tier carnivores includes fish, 14 species of which are resident in the Inlet. Many are also part of the sea-floor, or benthic, environment. Omnivorous yellow-eyed mullet live in the shallow waters of the Inlet sifting through the sands to capture a range of invertebrates as well as algae. Adult flat fish, such as sand flounder and sole, live on the muddy bottoms and ambush various invertebrates, while the cockabully



Feature Article cont.....

feeds on various crabs and shrimp. The stargazer has a different approach. It buries in the sandy bottom to ambush fish and crustaceans as they pass by overhead. The juvenile stages of some fish also feed on various invertebrates. Young rig shark are mainly bottom feeders taking crabs and other crustaceans. Trevally develop as juveniles living among the seagrass and feeding on small bottom-dwelling invertebrates. Young kahawai are more aggressive third-tier carnivores which feed on smaller fish, such as anchovy, before migrating to the open ocean as adults.

At the top of the food chain are the birds. Some are herbivores, like the black swan that has already been mentioned in association with the seagrass. A few are scavengers, finding anything suitable whether that be vegetable or animal. An example of this type is the black-backed gull. Other birds are omnivores, such as the teal and mallard, feeding by dabbling in shallow waters to eat both plant and invertebrate life. The most important species however are the carnivores. Oystercatchers feed almost exclusively on the cockles. Pied stilt feed in the shallow waters of the shoreline taking aquatic insects and larvae from the sediments. White-faced heron catch a range of animals from fish, crabs and worms as well as frogs, mice, insects and spiders on land. Shags feed totally on fish that are caught when the bird dives.

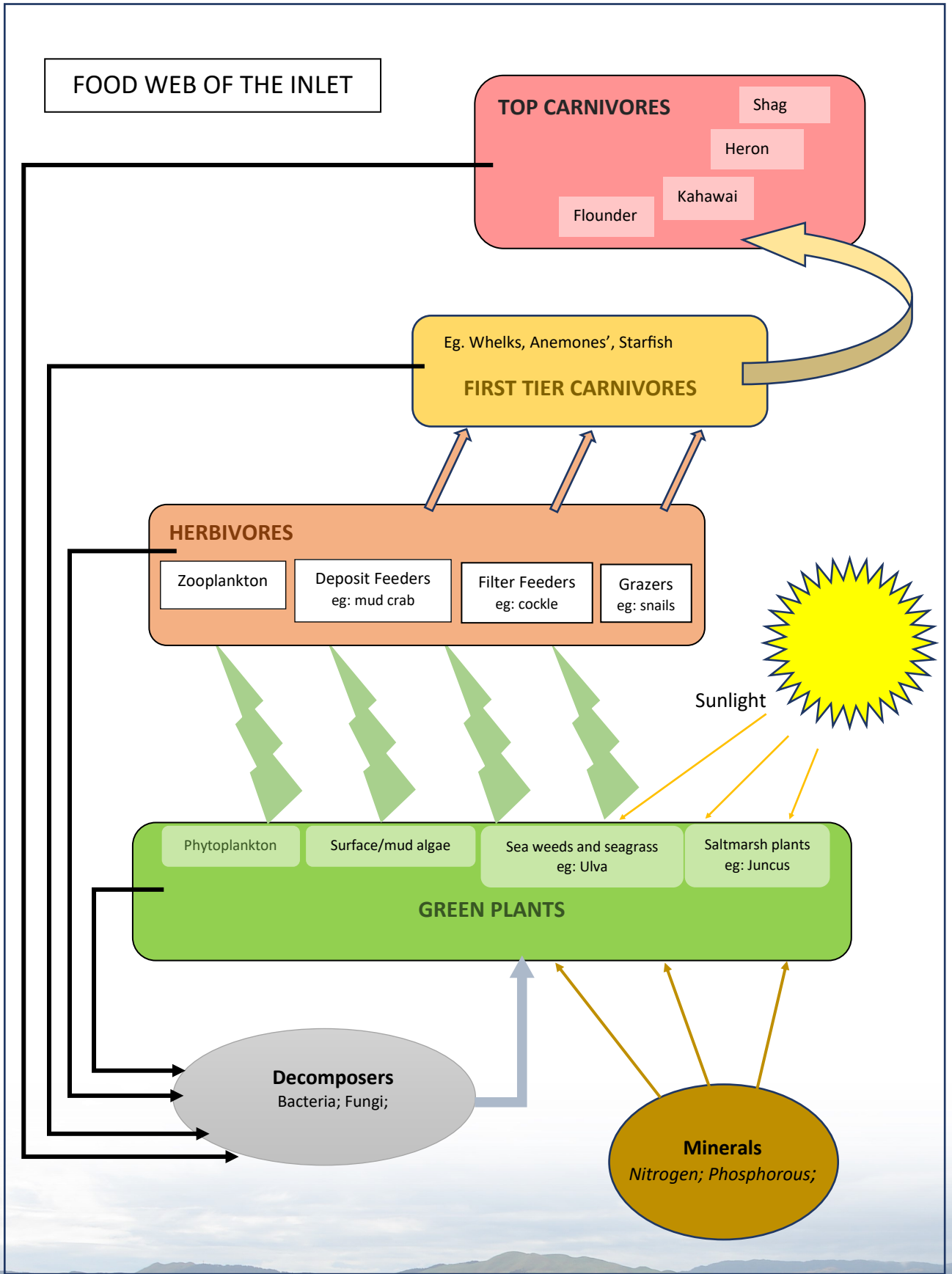
All the birds and many of the fish effectively remove energy, captured by photosynthesis, out of the Inlet as they swim into the open ocean or fly away to other sites. Humans are also part of this process when they take shellfish, fish and the occasional bird from the aquatic environment of Pāuatahanui.

Within the overall food-web are several feedback loops involving dead and decaying animals and plants, their spores and waste products, predation and, even parasitology.

The whole picture can be summed up by the diagram opposite, based on the one created by Neil Bellingham in his informative and well-regarded school workbooks about the Inlet written in the 1980's.



Feature Article cont....



WELLINGTON RESTORATION DAY

Wellington Restoration Day is an annual event that provides a networking and learning opportunity for those involved in ecological restoration in the Wellington region.

In February, Nature Space notified all members of a confirmed date for this year's Restoration Day event. GOPI was given advanced notice of this upcoming event so that it could be included in this edition of *The Inlet*. The theme, venue and date of this year's event was to be:

BIRDS, BUGS and LIZARDS

Samuel Marsden Collegiate School, Karori, Wellington

Saturday 6 June

However, with the current restrictions in place for Covid-19, the event, which had been put on hold, has now been cancelled for this year. It is hoped that it can be re-scheduled to take place in 2021.

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 Regional Council – 0800 496 734 (24 hours)

Boating infringements: Greater Wellington Regional Council – 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.

235 5052 (Chair, GOPI) or pauainlet@gmail.com.



Guardians of Pāuatahanui Inlet

www.gopi.org.nz
pauainlet@gmail.com

Membership Form: new members

To join the Guardians of Pāuatahanui Inlet, you can pay your subscription either online or by post. **IF YOU ARE PAYING ONLINE, PLEASE REMEMBER TO FILL IN THIS FORM WITH ALL DETAILS, AND EMAIL OR POST IT TO US.**

Online payment

1. Pay your sub via e-banking into our Westpac account 03-1533-0009387-00. In the 'Particulars' or 'Reference' columns, **YOU MUST** write your surname **AND** initials **AND** the period of your sub (1-yr or 5-yr).
2. Then fill in this form and either email it to us at pauainlet@gmail.com or post it (see next column for our postal address)

Postal payment

1. Write a cheque made payable to 'Guardians of Pāuatahanui Inlet'.
2. Then fill in this form and send it, along with your cheque, to: Membership Secretary, Guardians of Pāuatahanui Inlet, Box 57034, Mana, Porirua 5247.

Please fill in your details for our records. If you are filling in this form electronically, **click** at the beginning of a dotted line and then type.

Name:

Address:

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E-mail: Phone:

Please put next to the subscription you are paying (electronic completion – **highlight** the box and type lower case x.) We are also very grateful for donations. (We are a registered charity for tax purposes: registration number CC47523.)

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Website and video clips Other:

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