



**POLLUTION  
BUSTERS  
CLUB**



**BIODIVERSITY**  
ISSUE 54 - April 2013

*"Protecting our biodiversity  
begins with a single native plant  
that feeds a single native animal."*  
Biodiversity Advice, Waikato.



## Tena koutou ngā hoa ma Hello Pollution Busters!

We hope you had a fantastic summer break (what great weather we had!) and have enjoyed being back at school this term. A big hello to all the parents and caregivers out there too!

The topic for this newsletter is biodiversity. What is it? Why is it important? What can you do to help?

Thanks to those of you who entered the sticker competition. There were some really neat entries with good messages about pests. See some of the entries on page 10. In this newsletter we have a colouring competition – see page 11.

This is **your** newsletter Pollution Busters, so send us what you want to see in it. If you have made something cool recently or have a great idea for our environment please let us know by posting/emailing us photos, diagrams, pictures or letters and we will put them in a future issue.

Soon it will be starting to cool down and it's a great time remind your family and friends to BEE prepared for winter... get your wood now if you haven't already!

We hope you have a wonderful holiday break and enjoy spending time with whanau and friends.

“Kia u, kia ngākaunui ki ngā mahi pai” Be steadfast and conscientious in all your good work.

From BuzzBOP and the team at  
Bay of Plenty Regional Council.

# What is biodiversity?

Biodiversity is short for biological diversity

- biological meaning living things
- diversity meaning variety or difference.

The word biodiversity describes the variety of all living things on Earth; from tiny bacteria and the smallest beetle or plant to the massive kauri and whales. The indigenous biodiversity of New Zealand includes all living things, except for the introduced ones.

Scientists think that New Zealand has more than 80,000 native animals and plants but only 30,000 have been named so far. If that's the number for a country as small as ours imagine how many unknown creatures and plants are out there in the world!

## Did you know?

New Zealand was once home to the world's largest known bird of prey. The Haast's eagle had an impressive wingspan of 3m - almost the length of a car!!

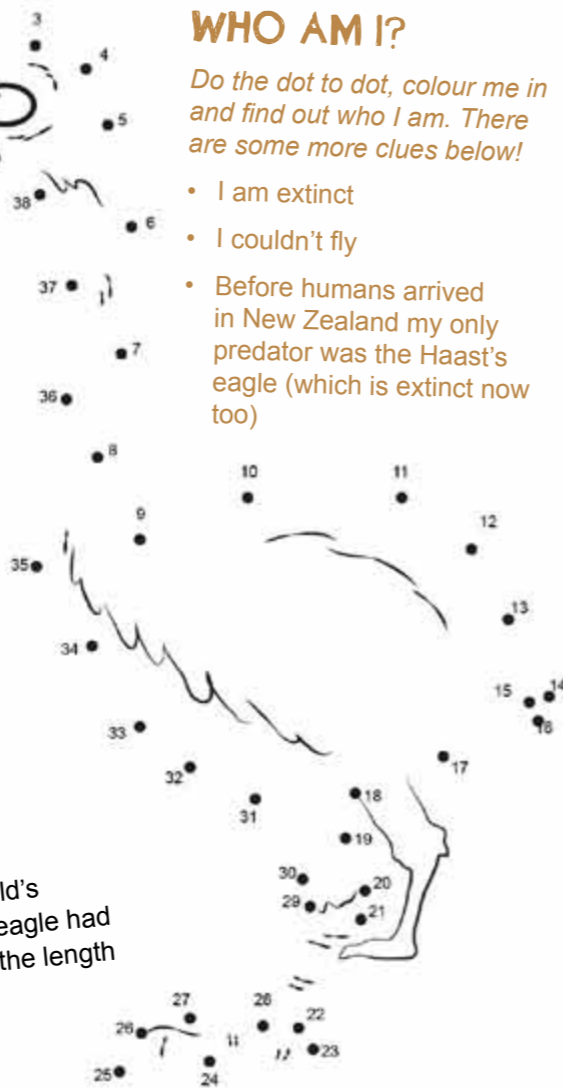
## Words and their meanings

<b>Biodiversity</b>	The variety of living things on earth.
<b>Ecosystem</b>	A community of living things, together with their environment.
<b>Endemic</b>	Any living thing that is only found in one country on earth.
<b>Extinct</b>	Species of plants and animals that no longer exist.
<b>Connected</b>	Joined or linked together.
<b>Indigenous</b>	Native to a particular region or environment but occurring naturally in other places as well.
<b>Introduced</b>	Plants and animals that have been brought here by people.
<b>Forest tract</b>	An area of forest.
<b>Migratory</b>	Birds that move from place to place at regular times each year.
<b>Native</b>	A species that is found to be naturally living in New Zealand and has not been introduced by people.

## WHO AM I?

Do the dot to dot, colour me in and find out who I am. There are some more clues below!

- I am extinct
- I couldn't fly
- Before humans arrived in New Zealand my only predator was the Haast's eagle (which is extinct now too)



# New Zealand's biodiversity - One of a kind!

New Zealand's biodiversity is really special as a lot of our plants and animals are only found in this country (endemic) - making it one of a kind!

In fact, more than 80 percent of New Zealand's native plant life can't be found anywhere else in the world!

The uniqueness of New Zealand's biodiversity goes back more than 80 million years... way back then New Zealand was part of a super-continent which we now call Gondwana. New Zealand split away from Gondwana and never joined land again - this meant that all our plants and animals have developed in a very special, New Zealand way.



NZ's native plants

We need to keep what we've got left and improve its condition by managing the threats.

## Our biodiversity is...

**UNIQUE** - We have a lot of endemic animal and plant species so we need to look after them on behalf of the rest of the world so they are there in the future.

**STILL DECLINING** and needs protection (see page 5 to learn about threats)

## BEING THREATENED by:

- **Pest plants and animals** crowding their habitat or eating them.
- **People** causing pollution or removing their habitats (like when they remove trees to build houses).

## NEEDING YOUR HELP!

- You can get involved in community care groups or volunteer for different conservation projects.

## WORDFIND

I I N U F L T T M M P Y C S Y  
 N R N S P O C E A O T S I C D  
 T K R D T N T C H I Q R M W S  
 R S F A I S H U S Q Q N E N Z  
 O T R T Y G T R V T X E D C G  
 D A X S Q U E U E R T J N Z E  
 U E O T K V A N I J S A E W N  
 C C L A I Q Y R O T A R G I M  
 E Y W D P A P A T U A N U K U  
 D A O F A N T A I L S N A J O  
 L I J A T U H A M E N A T V E  
 B C O N N E C T E D T T E Q T  
 M O A C Q W M W L A C I W I K  
 Z D R W Y U F R R B X V Y V W  
 V J G X Z B S E Q E I E P W F

BIODIVERSITY  
 CONNECTED  
 ECOSYSTEM  
 ENDEMIC  
 EXTINCT  
 FANTAIL

INDIGENOUS  
 INTRODUCED  
 KIWI  
 MIGRATORY  
 MOA  
 NATIVE

PAPATUANUKU  
 POHUTUKAWA  
 RATA  
 TANEMAHUTA  
 TOTARA  
 WETA

Keep your cat indoors at night and attach a bell to its collar to warn birds and other animals of the danger.



# Reasons for protecting our biodiversity



A lot of our food, oils, fibres (for clothing and material), medicines and pesticides come from plants and animals.

Our beautiful 'clean and green' country full of native birds and plants is good for tourism because people want to come and see them, and it's also good for us to have lots of wonderful outdoor spaces to enjoy the environment.

Some of the species we don't yet know about could be important medicine or food.

We depend on healthy forests, bush and wetland areas to filter our rainwater.

Our native plants and animals are a part of New Zealand's unique place in the world. We have to help save them!

Having a variety of plant and animal life means that if some of these get sick with a disease there will be other (different species) that will survive.

Plants and animals all depend on one another. If one dies out, what happens to the rest?

Plants and animals all have an important job in their ecosystem. Some creatures (like worms and insects) help with the clean up of dead material. Imagine the mess if they weren't there!

## Kaitiakitanga – Guardians of the Earth

Māori believe that all living things are linked through the sky father Rangi-nui, and the earth mother Papa-tū-ā-nuku. Their children are each responsible for an element of Earth. Two that are really important in the natural world are Tāne-mahuta – the god of the forest and Tangaroa – the god of the sea. Māori understand that all living things are important and as kaitiakitanga or guardians of the Earth it is the responsibility of people to protect and enhance the ecosystems of the atua (gods).



Kaitiakitanga is a concept we can all learn from. Humans are the only creatures on Earth that can help maintain and protect biodiversity. This gives us a unique place in the web of life! It is up to us to solve any environmental problems and live in a balanced, sustainable way with our environment.

We think all you Pollution Busters are doing a fantastic job as kaitiakitanga – so keep up the good work. Tāne-mahuta and Tangaroa images © EnviroSchools Foundation

**If the kererū and the tui died out what would happen to the trees with large berries like the tawa?**

These are the only birds that can eat large berries, and because they fly long distances they help distribute the tawa seeds throughout the forest when they come out the other end of the bird!

**This is an example of plants and animals depending on each other!**



# Threats to biodiversity

**The one major threat to biodiversity is us!** Before humans arrived New Zealand was mostly covered in forest. These forests were the home for many birds, insects, plants and all kinds of living things. Each of these had their own part to play in the web of life and the world did pretty well without us!

Once humans arrived they started doing things that upset this natural balance and made new connections in the web of life. Unfortunately a lot of these changes have happened too fast for the natural ecosystems to cope.

Pest plants like gorse and wild ginger thrive in New Zealand and grow so fast that they take up the space where the native plants used to live. Possums are eating the leaves of the trees in our forests and the berries that native birds like the kererū depend on for their food. The result of all this could be the extinction of plants and animals!

## Other threats to our biodiversity:

**Loss of habitat** – cutting down trees to clear the land for more houses or farms destroys the home of many plants and animals. If they don't have anywhere to live what do you think happens to them?

**Hunting** – hunting in moderation is fine. But if we kill too many animals of one species (this includes catching lots of the same fish) then the population cannot survive.

**Invasion by pests** – we learnt all about these in our last issue.

**Pollution** – pollution gets into our waterways and air and can harm the ecosystems or homes of lots of living things.

**Climate change** – changing temperatures and the difference in things like rain can also make a difference to a lot of ecosystems.

# Marine Biodiversity

'Marine biodiversity' is the variety of life in coastal and ocean environments.

Many human activities in and around New Zealand impact on our marine biodiversity, including:

- **Fishing** – recreational and commercial
- **Land use** – through sediments and pollution
- **Exotic pests** – could be introduced by shipping
- **Humans contributing to climate change** – it affects ocean temperature and levels.



## What can you do?

- Stick to the rules – like fishing limits.
- Prevent pollution – Don't add to the problems in the sea – take all rubbish back to shore.
- Remember what happens on land can affect the sea so don't let water full of pollutants like soap, litter, grass clippings or chemicals run down the road and into drains – these end up in the oceans.
- Check out Issue 49 'Water' to learn more about pollutants.
- Join a coastal Care group.



## NATIVE OR NOT?



Hectors Dolphin



Possum



Kiwi



Kakapo



Native Bat



Rook



Cat and mouse



Rat

Do you know which is a native and which is a threat to our biodiversity?

Answers are on page 12

# FEATHERY FACTS

New Zealand is a land of birds (bats are the only land mammals).

NZ has greater diversity of seabirds breeding on its shores and islands and feeding in its waters than any other country in the world. Seabirds are mostly threatened by predators (especially in their nests) and fishing bycatch.

10 percent of the world's seabirds are endemic to New Zealand and at least 20 species are threatened or endangered.

Many NZ birds can live until they are really old and have slow breeding rates (don't always have chicks every year and then not many chicks when they do breed.). Several are flightless. 37 percent are threatened.

Black stilt (kakī) are one of the most threatened species, with only about 100 left.

Kākāpō have about 125 known individuals.

The kiwi egg is six times as big as normal for a bird its size! A mature kiwi egg is about 20 percent of the female's body weight. In human terms this would mean a 50 kilogram woman delivering a 10 kilogram baby!

# BIRDS

You can plant trees in your garden that will attract birds. The Department of Conservation has lots of information about trees that are a food source for birds.

[www.doc.govt.nz/publications/conservation/native-animals/birds/tree-planting-for-native-birds/](http://www.doc.govt.nz/publications/conservation/native-animals/birds/tree-planting-for-native-birds/).

But a great way to get birds to come into your garden is to feed them. It's great to feed birds all year round but the time that they need extra feeding is in the winter. This is because there is less natural food around and birds use up lots of energy looking for food in the shorter and colder days. It may take about two weeks for birds to find the food but once they do they'll be lining up and waiting for you to serve them!

There are a few foods that you should NOT feed birds.

They are: Avocado, salt, kiwifruit, honey, anything mouldy or rotten.

## EASY BIRD TABLE

Get a piece of wood and hammer some nails into it leaving them sticking up a few centimeters to secure bits of food to the table for the birds to eat (like bird pudding, apples or grapefruit cut in half). Have an adult nail it to a tree branch (out of reach of cats - a metal sheath around the trunk will stop cats climbing up).

## BIRD BREAD PUDDING

### Ingredients:

- About 800g lard or margarine
- 3 cups porridge oats
- 1 cup raisins
- Handful of grated cheese
- Handful wild bird seed
- Empty margarine or small yoghurt tubs



### Method:

- Gently melt the lard or margarine over a medium heat (get an adult to help you with this).
- When the fat has melted mix in the oats, raisins, cheese and wild bird seed.
- Combine the ingredients well then spoon into the margarine or yoghurt tubs (or could also mould them into shapes that will fit in your bird feeder).
- Put the 'puddings' in the fridge to set and then take them out of the container and put them on the bird table.

(this pudding recipe has come from 'Tea for the Tui' written by Rosemary Tully)



- Weta are at risk of being eaten by introduced predators like rats, stoats, cats and hedgehogs.
- The weta is only found in New Zealand and is so old it has outlived the dinosaurs! They haven't changed very much in the last 100 million years.
- Weta are big insects. Some of the giant weta are huge and are one of the heaviest insects in the world.
- Weta have their ears on their front knees and can feel the vibrations of noises around them.
- Weta adapt well to living in a modified habitat.
- Female weta lay 100-300 eggs so if you build a home they like and weta live there, their numbers will grow!

## MAKE A WETA MOTEL

A weta motel is a nice dry hole that weta can crawl into and be safe from predators.

You can make a basic bamboo version, or a luxury wooden structure depending how flash you want to get. A simple motel can be easily made by cutting a large length of bamboo into sections so the bamboo joint forms the roof of the motel. Tie the piece of bamboo vertically onto a tree with a cable tie or piece of string and it's done - a 1 star weta motel complete.



If you want to make a 5 star wooden motel see the instructions on [www.doc.govt.nz/getting-involved/home-and-garden/build-a-weta-motel](http://www.doc.govt.nz/getting-involved/home-and-garden/build-a-weta-motel) - you will probably need an adult to help you with this one.

Activity and motel images sourced and adapted from [www.doc.govt.nz](http://www.doc.govt.nz)



## SKINKS AND GECKOS

In New Zealand we have two types of lizards - geckos and skinks. The biggest threat to them is habitat loss (losing their homes) and predators. Geckos and skinks can lose their tails to distract predators while they escape - how clever is that!

You can attract lizards into your garden by setting up a nice habitat for them. You can use some layers of cardboard, Onduline or corrugated iron separated by bits of branches to make them a great house.

Then plant things like:

- flax
- divaricating (having branches of wide angles and interangled) shrubs like mingimingi
- vines like Muehlenbeckia
- epiphytes like Astelia
- species with loose bark and/or hollows like rata, totara and puriri
- species that accumulate a skirt of dead foliage like tree ferns and cabbage trees.

Cats learn to hunt around skink/gecko houses so you should use it temporarily just to see what you've got.



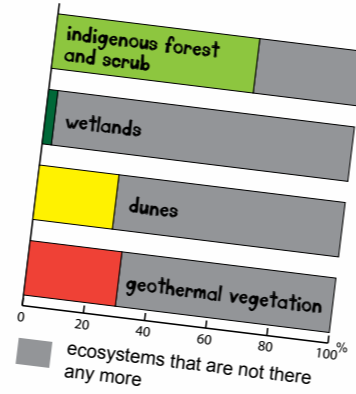
# OUR FACTS AND FIGURES

## New Zealand has lots of endemic species

- 80% of all vascular plants
- 70% of all native terrestrial (live on the land) and freshwater birds
- All bats
- All native amphibians
- All reptiles
- 90% of freshwater fish

## Habitats

Bay of Plenty still has about 66 percent of its original indigenous forest and scrub cover, but other ecosystem types are not so well off. Only about 3 percent of our wetland area remains, 26 percent of our dunes (although lots of these have been changed), and less than 30 percent of our geothermal vegetation.



## Plants and trees

**Tallest trees** - kauri, rimu and kahikatea (about 50 metres+!)

**Largest tree** - Tāne-mahuta. It is a kauri tree and it's the third biggest tree in the world (about 50 metres)!

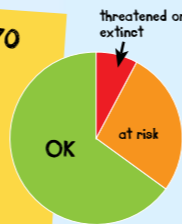
**Oldest trees** - kauri can reach at least 2000 years in age – wow, that's old! Other trees that can live a long time are pōhutukawa, rimu, tōtara, mataī, miro (over 1000 years).

Wow! It takes a lot of buses to be as tall Tāne-mahuta! (about 50 metres high)

Did you know that the tallest and the oldest pōhutukawa tree can be found on the East Cape at Te Araroa. It is about 20 metres high and between 350-600 years old!

New Zealand has about 2370 native plants

About 80% are endemic.  
About 8% are threatened or extinct and 27% are at risk.



## Freshwater fish

New Zealand has 35 native fish species (and no, trout are NOT native!).

Did you know the whitebait people eat are actually five species of native fish! They are baby inanga, kōaro, banded kōkopu, giant kōkopu and shortjaw kōkopu. They belong to the Galaxiidae family, which was named after the Milky Way galaxy, as the very first species described was sprinkled with dazzling spots.

Fish are threatened by drainage, pollution, vegetation clearance, over-fishing and barriers to migration. Half of our native fish spend time at sea.

What will I be when I grow up? Maybe a giant kōkopu!

## Tuatara

- found only in NZ
- only remaining species of the order Sphenodontia – all other members became extinct about 60 million years ago, so tuatara are of ancient origins (think dinosaur age). People from around the world are fascinated by them.

## Bay of Plenty bits

- The Whirinaki Forest is also known as the Dinosaur Forest. This is because most of the trees there including rimu, tōtara, kahikatea, mataī and miro have been around since dinosaurs were alive.
- Whirinaki-Te Urewera-Raukūmara forest is the largest remaining continuous area in the North Island. It goes from ranges to coast. It is thought that all the birds found there now are most like the ones that at one time would have been all over New Zealand.
- Ōhope Scenic Reserve and Orokawa/Homunga Bay are some of the biggest and best remaining sites for coastal pōhutukawa forest.
- Thornton coast has a unique variety of kānuka which is endemic to the Bay of Plenty region and can be found between the Rangitāiki and Whakatāne rivers and on Whangakopikopiko Island in Ōhiwa Harbour.
- Tauranga and Ōhiwa Harbours are significant to the world because they support lots of migratory wading birds and provide seasonal habitat for threatened species like black stilt and NZ dotterel.

## PUZZLE FUN - WHO AM I?



Cut out the pieces and make the picture. Here are some clues about who I am:

- I live on the beach
- I nest and lay my eggs in the sand/dunes
- I am native

## Bats

- NZ's only native land mammal.
- 1 extinct plus two still living – long tailed and short tailed.
- Long tailed bat – aerial feeder of insects, flies up to 60 km/hr.
- short tailed bat – also spends time hunting for food on the ground, unique among bats.
- both have colonies in trees and are heavily preyed by possums, stoats, cats and especially rats.

At one roost near Mt Ruapehu one cat killed at least 102 bats over 7 days.

## NZ frogs

- New Zealand's frogs haven't changed very much in 70 million years.
- New Zealand has four species of native frog.
- Native frogs have no external ear-drum or vocal sacs, they don't croak like most frogs, instead they make a squeaking sound.
- Frogs are very sensitive to changes in their environment and are often used as a measure of ecosystem health.
- You can help native frogs by restoring and protecting the native forest along our many rural streams and rivers.

# How can you help?

The key to helping protect biodiversity is creating a balance of what we need and what the natural environment needs.

Below are some good helpful tips:

- Plant native species. Some plants (like flax) attract birds so you might end up with a tui singing to you!
- Bust those weeds! Check out [www.weedbusters.org.nz/](http://www.weedbusters.org.nz/)
- Get your dog avian (bird) aversion trained – make your dog bird-friendly.
- Keep your cat indoors at night and attach a bell to its collar to warn birds and other animals of the danger.
- Garden organically – some garden chemicals are poison! They can be harmful to us too.
- Compost your food waste – your garden and a whole lot of animals love compost! You can use it to make the soil better and reduce what you send to the landfill.
- Reduce, reuse, recycle!
- Reduce your carbon footprint by walking to school, taking the bus and using less electricity. What are some other actions to reduce your footprint?



# BIODIVERSITY

THE VARIETY OF LIVING THINGS ON EARTH



## CLUB CORNER

Thanks pollution busters for all your cool artwork and letters. Make sure you enter this issues colouring competition on page 11 and check the club corner next time to see if yours is featured!



1st

1st: Nathanael and Evelyn Barton, Whakatāne (Ages 9 and 11)

2nd: Emily McCarthy, Tauranga (Age 15)

2nd



Thanks to Sean Winch for this cool drawing of BuzzBOP!



BuzzBOP and Team  
Bay of Plenty Regional Council  
Freepost 122076  
PO Box 364  
Whakatāne 3158

Email: [buzzbop@boprc.govt.nz](mailto:buzzbop@boprc.govt.nz)

Write your name, age and address on your letters and on the back of your artwork.

**Have you moved and changed address?**  
If you have moved and changed address, please write or email us so we can make sure you get your newsletter.

## COLOURING COMPETITION

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Age: \_\_\_\_\_

Send entries to:

**BuzzBOP and Team**  
**Bay of Plenty Regional Council**  
**Freepost 122076**  
**PO Box 364**  
**Whakatāne 3158**

# BuzzBOP'S friend

Nancy Willems  
Environmental Scientist



## What do you do?

Provide technical advice and support for all things relating to indigenous biodiversity on land. I don't do the work on the ground though.

## What is the best part of your job?

Getting out to look at sites and get to places I haven't been before.

## What is your message to Pollution Busters?

If everyone does a little bit it eventually adds up to a big bit, so keep doing your bit.

## HELPFUL WEBSITES

For more information about biodiversity take a look at the following websites:

- **Bay of Plenty Regional Council:** [www.boprc.govt.nz](http://www.boprc.govt.nz)
- **Department of Conservation:** [www.doc.govt.nz](http://www.doc.govt.nz)
- **New Zealand Biodiversity:** [www.biodiversity.govt.nz](http://www.biodiversity.govt.nz)
- **Kiwi Conservation Club (Junior Forest & Bird):** [www.kcc.org.nz](http://www.kcc.org.nz)  
Teaches Kiwi kids about New Zealand's wildlife and wild places.  
Check out their website for more information on how to join.
- **Ministry for Primary Industries:** [www.mpi.govt.nz](http://www.mpi.govt.nz)

### ANSWERS

Page 5 Native: hectors dolphin, kiwi, kākāpō, native bat.  
Not: possum, rook, cat and mouse, rat.

Page 9 Dotterel

### PHOTOS CREDITS:.

Cover Photos: Simple Designs  
Page 4 Tui, Kererū - Simple Designs  
Tawa Fruit - Nga Manu Images  
Page 5 Marine Biodiversity - NIWA  
Black Petrel, Snapper, Pile of Fish - Simple Designs  
Page 6 Shy Albatross - Simple Designs  
Kiwi - Bridget Palmer  
Page 7 Weta, Gecko - Bridget Palmer  
Page 8 Whitebait - Simple Designs  
Page 9 Dotterel (puzzle) - Brian Chudleigh



## Pollution Busters join up or change of address here...

Please have an adult check that the details are correct before you send this.

- I am a new Pollution Buster
- I am already a Pollution Buster but I have changed my address

Name \_\_\_\_\_

School \_\_\_\_\_ Birthday \_\_\_\_/\_\_\_\_/\_\_\_\_ day / month / year

Address \_\_\_\_\_

**BuzzBOP and Team**  
**Bay of Plenty Regional Council**  
**Freeport 122076**  
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Email: [buzzbop@boprc.govt.nz](mailto:buzzbop@boprc.govt.nz)

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