

Let's learn about Bittern!

School or educators pack.



for

BEGINNERS

Ages 4, 5 and 6 year olds



GAMES

Let's learn about bittern!
Bittern Boom Pop!

A fun game to help learners identify and record a bittern booming.



First watch the video of a bittern booming so we can see how they boom.
Can anyone re-enact a bittern booming? **TURN YOUR SPEAKER ON!**
1. Stand in a circle. Play the recording of a bittern booming over a speaker when the bittern BOOM stand up (sit down when booming stops)

EXPERIMENTS

WATER DIY EXPERIMENTS 1 & 2

Great for beginners. Involves counting, measuring, comparing results and discussion.

The water needs to be

CLEAR

Bittern are VISUAL HUNTERS they need to be able to see the fish in the water to hunt.



SHALLOW

Bittern have short legs (around 15cm) to be able to walk into the water to hunt.

EQUIPMENT & MATERIALS

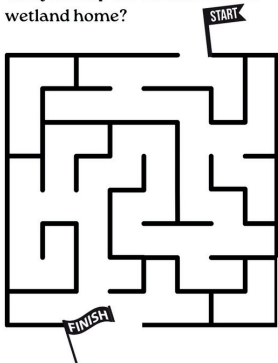
- 2x tall buckets with a hole in the bottom
- 2x tall buckets with a hole in the bottom
- Stereocopy of bittern booming
- dirt or sand
- Water

ACTIVITIES

Let's learn about Bittern!

WORKSHEET

Can you help the Bittern find his wetland home?



Finish the sentence.
Bittern live in ___lands and like to eat ____, frogs or eels.



Who else lives in a wetland?
Can you draw them?

STORY

A bittern named **Hū**
...a story of friendship and survival.

Let's learn about Bittern!



To help connect our future leaders with Bittern and their wetland homes.

WHY?

Bittern are a large native wetland bird just one step from extinction in Aotearoa New Zealand.

Bittern are ambassadors for healthy wetlands, when we focus on bittern we also help their wetland homes and other wetland species to thrive too.

Wetlands help slow down the water, help to protect us from flooding, filter the water to keep it clean and clear, store more carbon and have more biodiversity than any other ecosystem.

Through Bittern we connect our leaders of tomorrow to wetlands.

The Love Bittern Project's long term vision is to see Bittern thrive for future generations.

Pages contain information or activities

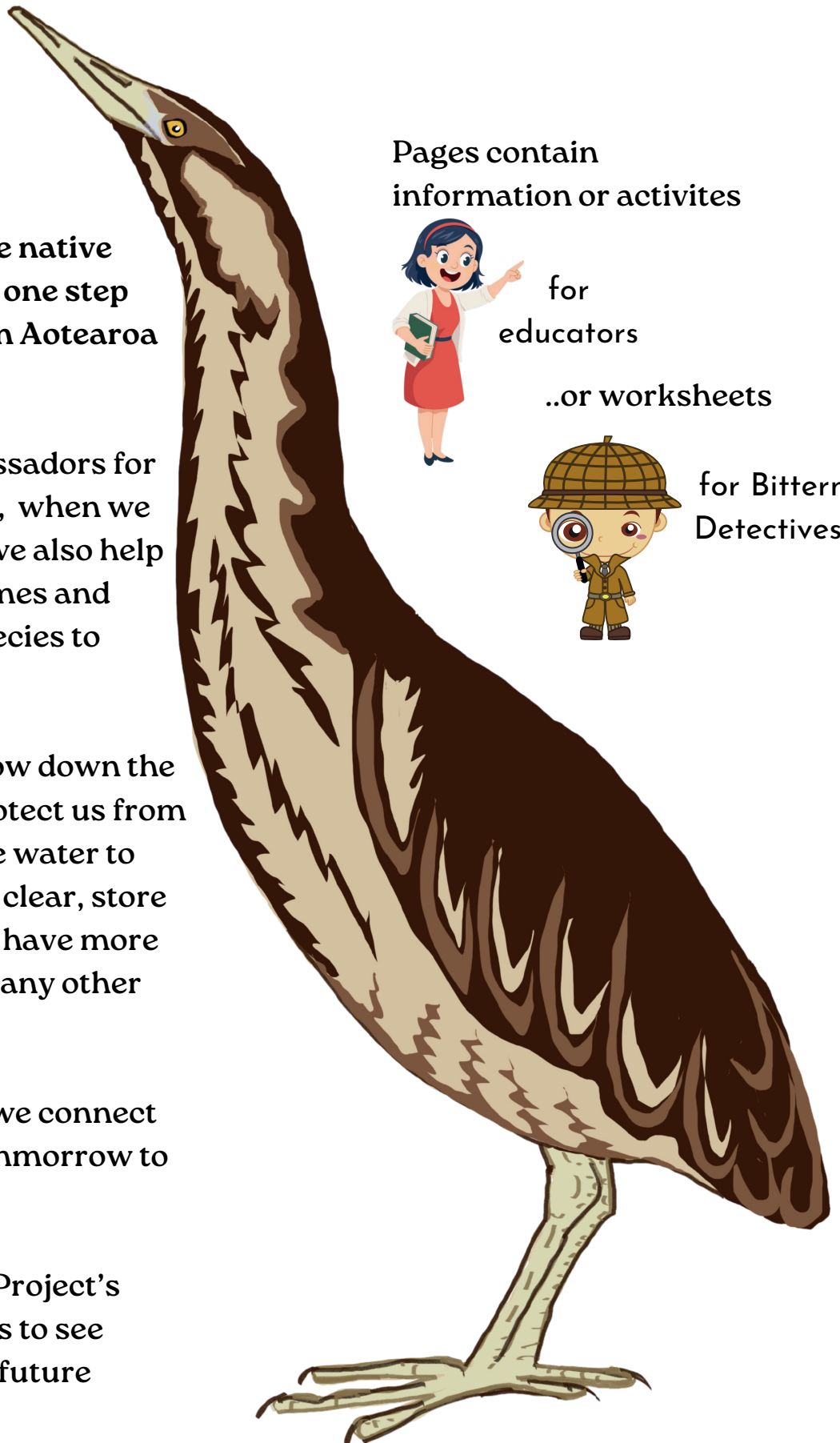


for educators

..or worksheets



for Bittern Detectives



Let's learn about Bittern!

BITTERN BASICS

Bittern are a large native wetland bird and there aren't many left.

Bittern are brown and light brown.

Bittern are BIG - 74cm tall, which is about the height of a dining room table.

The male Bittern booms in the spring to ask the girls to come and visit and tell other boys to stay away!

In te reo Māori their name is MATUKU-HŪREPO which means the heron who booms in the wetland.

Bittern are in trouble because most of their wetland homes have been drained or degraded, and predators like cats and stoats are eating their eggs and chicks.

Bittern mainly eat eels, fish or frogs...but they can also eat insects, snails, lizards and worms.

Bittern need our help, to protect them from predators and restore their wetland homes to provide places to hide and clear shallow water to hunt.



for
educators

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PROJECT



Mother Bittern lays 3-5 eggs in a nest in the wetland reeds.

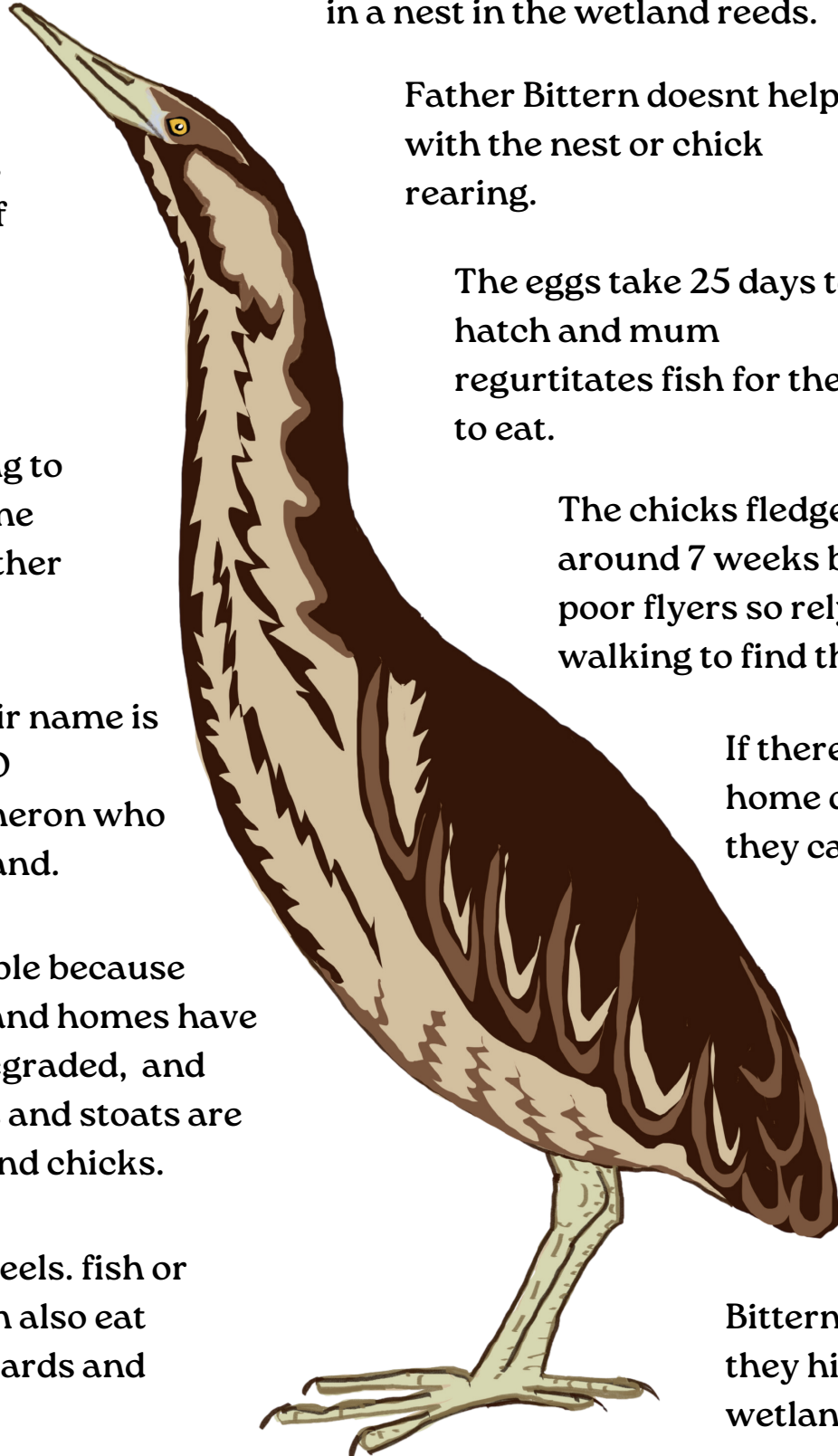
Father Bittern doesn't help with the nest or chick rearing.

The eggs take 25 days to hatch and mum regurgitates fish for them to eat.

The chicks fledge at around 7 weeks but are poor flyers so rely on walking to find their food.

If their wetland home dries up they can starve.

Bittern are shy, they hide in the wetland reeds.



Let's learn about Bittern!

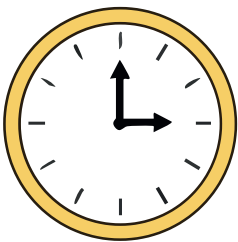
Program Outline

This school program is for beginner learners aged 4, 5 and 6.



Learning outcomes:

- Recall basic facts about bittern, where they live, what they eat, what challenges they face.
- Recognise and record the boom of a male bittern
- Recognise features in the wetland that Bittern need to thrive.

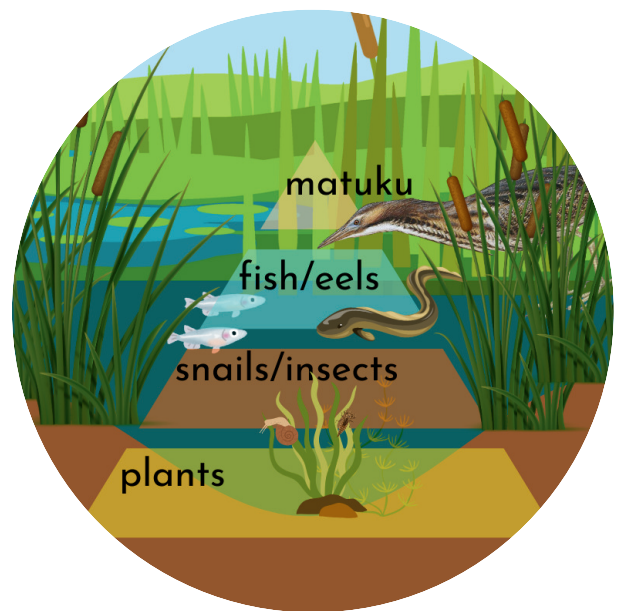


The program takes around 45-60 minutes for one class and is broken up into 10-15 minute segments.

1. Collect the knowledge from the room (10 mins)

- What is a Bittern?
- What do they look like?
- What do they sound like?
- What do they eat?
- Where do they live?
- How many Bittern do we have in New Zealand?
- How BIG is a Bittern?
- Have you seen a Bittern?

- What is a wetland?
- What do we find in a wetland?
- Who eats who in a wetland?



Answers help to build a picture of the food chain.

Resources

- Wetland characters and feature pin up cards can be printed off and put on a whiteboard as you go.
- TIP - draw a triangle on the whiteboard and place the cards where they belong in their trophic position.

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Program Outline

Fill in the knowledge gaps by reading a story.



2. Read the story 'A bittern named Hū' (15 mins)

To fill in the gaps we read the story of "A bittern named Hū"

The story follows the journey of a young bittern who is lost and can't find his home.

Through the dialogue you will learn more about what Bittern need and how we can help.

Collect the new knowledge

Re-look at our food web on our board – what else did we learn from the story?

Ask questions to draw out the missing components. eg-

- What did Herbert get excited by?
- Who was Keely the kahu trying to catch?
- What was the female bittern interested in?
- What had Sally done to restore her wetland?
- Why was Sally excited about seeing a Bittern

Resources

- Activity -Who eats who in a Wetland (next page)
- Worksheet for beginners (next pages)



You can access the [.pdf here](#) or a [narrated version here](#).

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for Bittern
Detectives



WETLAND FOOD WEB

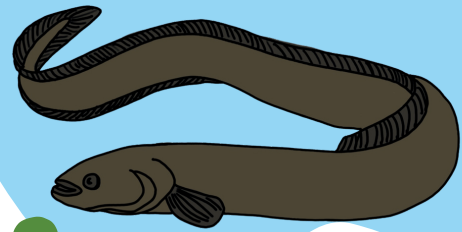
Draw lines between to show
WHO eats WHO?

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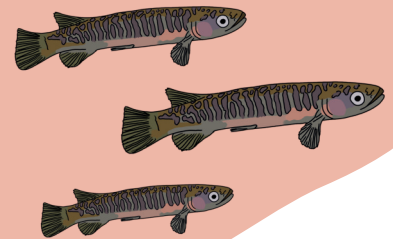
WHO
eats a Bittern

The Bittern is a
TOP predator in
our wetlands -
BIG eels are too!

Who eats eels?



Who eats fish?



Who eats insects?



Who eats frogs?



Who eats snails?



Who eats plants? What do Plants 'eat'?



Let's learn about Bittern!



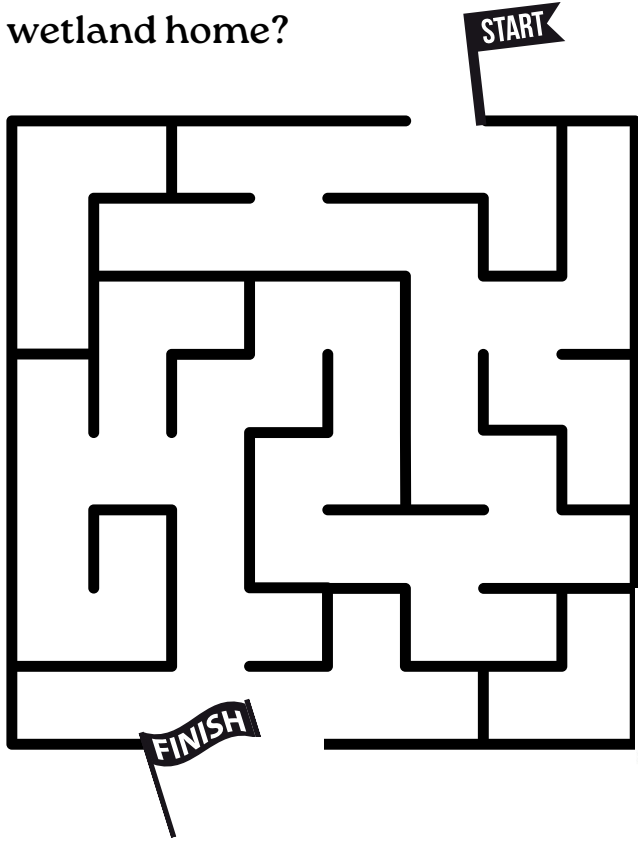
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WORKSHEET

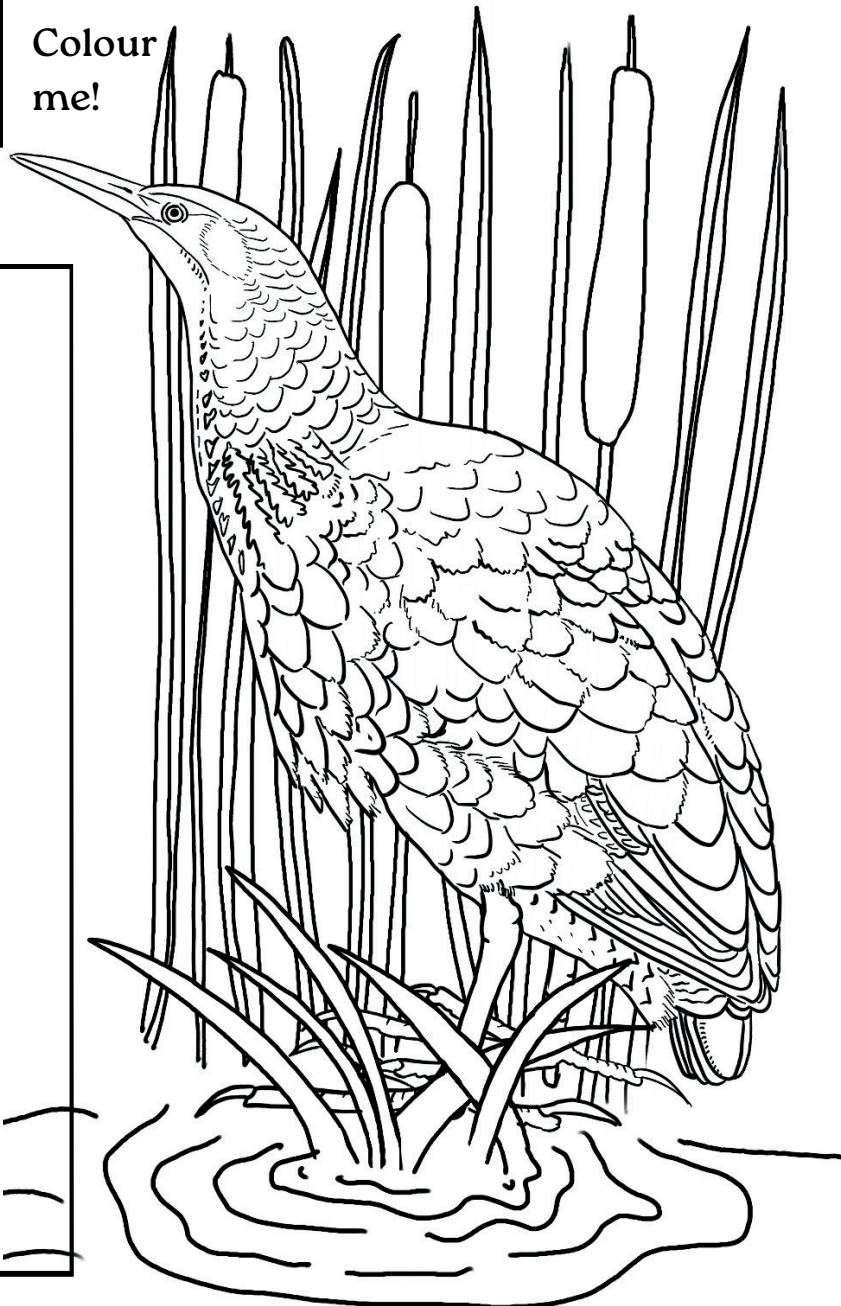
Can you help the Bittern find his wetland home?



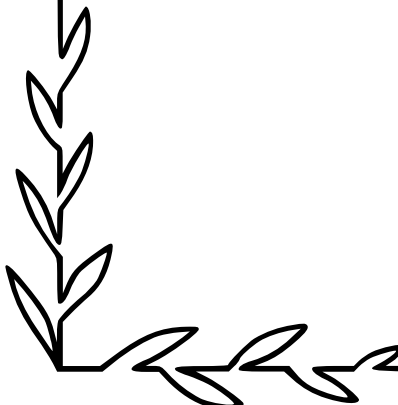
Finish the sentence.

Bittern live in
___lands and like to
eat _____, frogs or
eels.

Colour
me!



Who else lives in a wetland?
Can you draw them?



Let's learn about Bittern!

Program Outline

How to identify and record a bittern booming



3. Watch, listen and learn how a Bittern Booms! (15min)

One of their
te reo Māori names is:
MATUKU-HŪREPO
Matuku = the heron
hū = who booms
repo = wetland.

Only the male bittern boom. They boom year round but are more reliably heard in the spring when they BOOM to attract females and deter other males.

A 'boom' sounds more like a 'whoom' or the noise you make when you blow over the top of a glass bottle.

A bittern booms in a sequence of booms called a boom train.

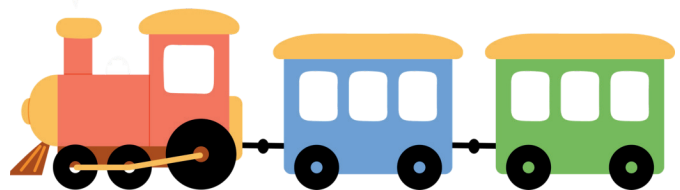
When we record bittern we count how many booms there are in a sequence and what direction the boom came from.

Resources:

- Activity - Watch a [video of a bittern booming](#)
- Can anyone re-enact the boom?
- Play - Bittern Boom Pop (see next page)



Boom Boom!



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Bittern Boom Pop!

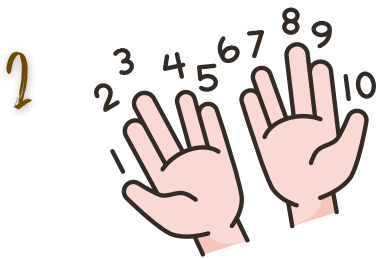
A fun game to help learners identify and record a bittern booming.



First watch the video of a bittern booming so we can see how they boom. Can anyone re-enact a bittern booming? **TURN YOUR SPEAKER ON!**



Sit quietly in a circle. Play the recording of male bittern booming over a speaker when you hear a bittern BOOM stand up (sit down again when booming stops)



Same as above PLUS stand up silently and count how many BOOMS there are in a sequence (before a pause of no booms)



Same as above BUT stay seated and close your eyes. Move the speaker outside the circle and get them to point to where they think the sound of the boom is coming from (direction) - open their eyes on a count of 3 to see where the speaker (bittern) is.

Bittern fun facts about booming ...

- Only the male bittern booms
- The number of booms in a sequence signals how strong he is
- Bittern boom to attract females and deter other males

• Bittern boom year round but boom more in spring - breeding season

• Bittern boom most at dawn and dusk

- Young bittern can sound more like a hiccup than a boom!



Let's learn about Bittern!

Program Outline

Experiments to look at what bittern need and how the wetland helps.



4. Water and wetland experiments (20 mins)

Bittern are visual hunters, they need clear water to see their food and it needs to be shallow enough that they can walk in to hunt.

The following pages contain DIY experiments that can be carried out at school to help learners understand what bittern need... and how wetlands help

EXPERIMENT 1

Present the ideal, demonstrating that the water is clean and clear enough for a bittern to see and walk in to catch their food.

EXPERIMENT 2

Present the problem, demonstrating that the water is murky and too deep and a bittern wouldnt be able to catch its food here!

EXPERIMENT 3

Present the solution, wetland plants trap sediment and fix bacteria to help filter the water to keep it clean and clear. Using the 'wetland sponge' to filter the water demonstrates this.

EXPERIMENT 4 - Optional for this age, can detract from main learning.

Focusses on how wetlands help to slow down the water and keep the ground wet enough for wetland species to live there.

Resources:

Experiments on following 6 pages

Let's learn about Bittern!



for
educators

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PROJECT



WATER DIY EXPERIMENTS 1 & 2

Great for beginners. Involves counting, measuring, comparing results and discussion.

The water needs to be

CLEAR

Bittern are VISUAL HUNTERS they need to be able to see the fish in the water to hunt.



The water needs to be

SHALLOW

Bittern have short legs (around 15cm) to be able to walk into the water to reach fish the water needs to be 15-25cm

EQUIPMENT & MATERIALS

- 2x tall buckets with fish drawn in the bottom.
- 2x rulers
- Sterile outdoor plant mix, coffee grounds or dirt on site to make dirty water.
- Water



STATION ONE

A bucket with fish drawn in the bottom. Fill with clean water 20cm deep.

- ? How deep is the water?
? How many fish can you see in the water?
? Could a Bittern feed in this water?

✓ A bittern can feed in water like this because its CLEAR enough to see fish and SHALLOW enough to reach fish to catch.

STATION TWO

A bucket with fish drawn in the bottom. Fill with dirty water 30cm deep or to top.

- ? How deep is the water?
? How many fish can you see in the water?
? Could a Bittern feed in this water?

✗ A bittern can feed in this water because its NOT CLEAR enough to see fish and NOT SHALLOW enough to reach fish to catch.



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WETLAND DIY EXPERIMENT 1



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In your water bucket...

1. How many fish can you see?

2. How deep is the water?



? Could a Bittern feed in this water?

? Why could a Bittern feed in this water?
How do we describe the water?



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WETLAND DIY EXPERIMENT 2



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In your water bucket...

1. How many fish can you see?

2. How deep is the water?



? Could a Bittern feed in this water?

? Why can't a Bittern feed in this water?
How do we describe the water?



Let's learn about Bittern!

WETLAND DIY EXPERIMENTS 3 & 4



for
educators

LOVE BITTERN
PROJECT



For assisted learners. Involves counting measuring, subtracting, comparing results and discussion.

How does a wetland help
make the water

CLEAR?

Wetlands (plants) act like a filter to help trap sediment and filter out pollutants.



How does a wetland

STAY WET?

Wetlands are like sponges they soak up and slow down the water to keep wet for longer.

This means fish, eels and frogs can still live there and Bittern can still hunt.

EQUIPMENT & MATERIALS

- 2x paint trays or trays on a lean
- 2x measuring jugs
- 2x water containers
- 2x sponges that fit tight across the tray
- coffee grounds or dirt on site to make chunky dirty water.
- Water



STATION THREE

A tray on a lean, with a sponge across it, 500ml of dirty water and jugs to pour the water.

? What happens to the water when its poured through the wetland sponge?
How does the wetland help Bittern?

✓ The wetland helps to make the water clean and clear so Bittern can see the fish to catch.



STATION FOUR

A tray on a lean, with a sponge across it, 500ml of clean water and jugs to pour and measure.

? What happens to the water when its poured through the wetland sponge?
How does the wetland help Bittern?

✓ The wetland slows the water down so they stay wet for longer for eels, fish, frogs and Bittern to live there.

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WETLAND DIY EXPERIMENT 3



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Pour around 200 ml of dirty water slowly into the top of the tray.

1. What happens to the water when its poured through the wetland sponge?



Collect and pour the water from the bottom of the tray back in at the top.

2. What happens to the water when its poured through the wetland sponge again?

Compare the water you started with to the water that has run through the wetland:

- ? How do we describe the 2 water samples?

- ? Which water could a Bittern feed in?

- ? How does the wetland help Bittern?



Let's learn about Bittern!



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WETLAND DIY EXPERIMENT 4

Pour 200 ml of clean water slowly into the top of the tray.

1. WITHOUT THE WETLAND SPONGE
How long does it take for the water to run to the bottom of the tray?
2. WITH THE WETLAND SPONGE
How long does it take for the water to run to the bottom of the tray?



200ml

3. How much water is left at the bottom of the tray?



Compare the water you started with to the water that has run through the wetland:

- ? is there more or less water than you started with? How much water is left?

- ? What happened to the water?

- ? How does the wetland help Bittern?



Let's learn about Bittern!

Program Outline

Experiments to look at what bittern need and how the wetland helps.



Field Trips to a wetland

Field trips to a wetland are a great way to reinforce the learning in a real world setting.

This could be carried out in conjunction with

- fish monitoring, catching small fish in gee minnow traps to demonstrate the size of fish a bittern can eat.
- macroinvertebrate monitoring, taking a white tray out to contain and help see midge larvae, or aquatic insects (that feed the fish)
- planting reeds, grasses or rushes, to help the wetland keep the water clean and clear.

Resources:

- Activity or handout -Wetland Monitoring

nb. the wetland monitoring activity can be carried out as a field trip or can be given to learners to take home and carry out with an adult at a wetland nearby.

Let's learn about Bittern!



BEGINNERS
for Bittern
Detectives



WETLAND MONITORING

Find a wetland near you to check with an adult.

LOVE BITTERN
PROJECT

As you approach

Can you see.....
birds flying?

They are a sign
there are lots of insects!
Can you name them?



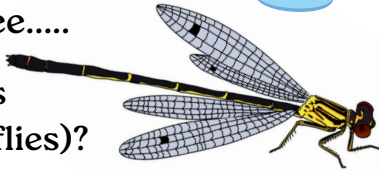
Can you see..
a fence?

To keep animals out
so they don't poo in the water, make the
water muddy or chase wetland birds.



Can you see.....
damsel flies
(or dragonflies)?

They are a sign your water is
cool and healthy!



Can you see..
reeds and rushes?

Places to hide for insects,
fish and Bittern!



Get a bit closer

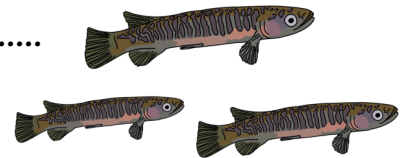
Can you see..
the bottom?

If you can see
through the water to the
bottom, it means it's clear!
Bittern can hunt here.



Can you see.....
small fish?

They help feed bigger fish,
eels and birds like Bittern!



Does it smell like.....
rotten eggs?

It doesn't have enough
oxygen for insects & fish
to live here.



Can you see.....
midge larvae?

They help break down rotten
leaves and feed the fish!



Does it feel.....
slimy & sludgy?

Most insect larvae, fish or
koura don't like to live here.

