

The Earth's Environment

A Marshy Mystery

As urban Sydney sprawls in all directions, natural bushland is being replaced by houses and roads. This Geographical Inquiry will focus on the connections between people and nature by looking at the endangered Green and Golden Bell Frog which was reported to be seen in the wetland at Blacktown Showground.



Inquiry Questions:

- **How does the environment support the lives of people and other living things, for example the Green and Golden Bell Frog?**
- **How can people use places and environments more sustainably?**

Health and Safety Issues

As you are working out in the field you need to be aware that:

- Ground material is often covered in moss and can be very slippery.
- Vines and dense undergrowth can trip.
- Fallen trees can be rotten and weak.
- Some animals can deliver painful or venomous bites.
- On slopes, rocks can be easily dislodged.

Outcomes

GE2-1: Examines features and characteristics of places and environments

GE2-2: Describes the ways people, places and environments interact

GE2-4: Acquires and communicates geographical information using geographical tools for inquiry

This excursion supports the teaching of The Earth's Environment unit.

Student Name: _____

Inquiry Aim:

The aim of this Geographical Inquiry is to investigate the Earth's Environment, with a focus on the connections between people and nature. You will be researching the reported sighting of a Green and Golden Bell Frog at the Blacktown Showground wetlands. You will evaluate the site and its potential to support a population of Green and Golden Bell Frogs.

Pre Visit Tasks: The Blacktown Bell Frog

Complete this section at school before your Brewongle Excursion

<http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10483>

1. Use the information and the video in the links above to write a paragraph describing the Green and Golden Bell Frog.

2. What do Green and Golden Bell Frogs eat?

As tadpoles _____

As adult frogs _____

3. What type of habitat do Green and Golden Bell Frogs live in?

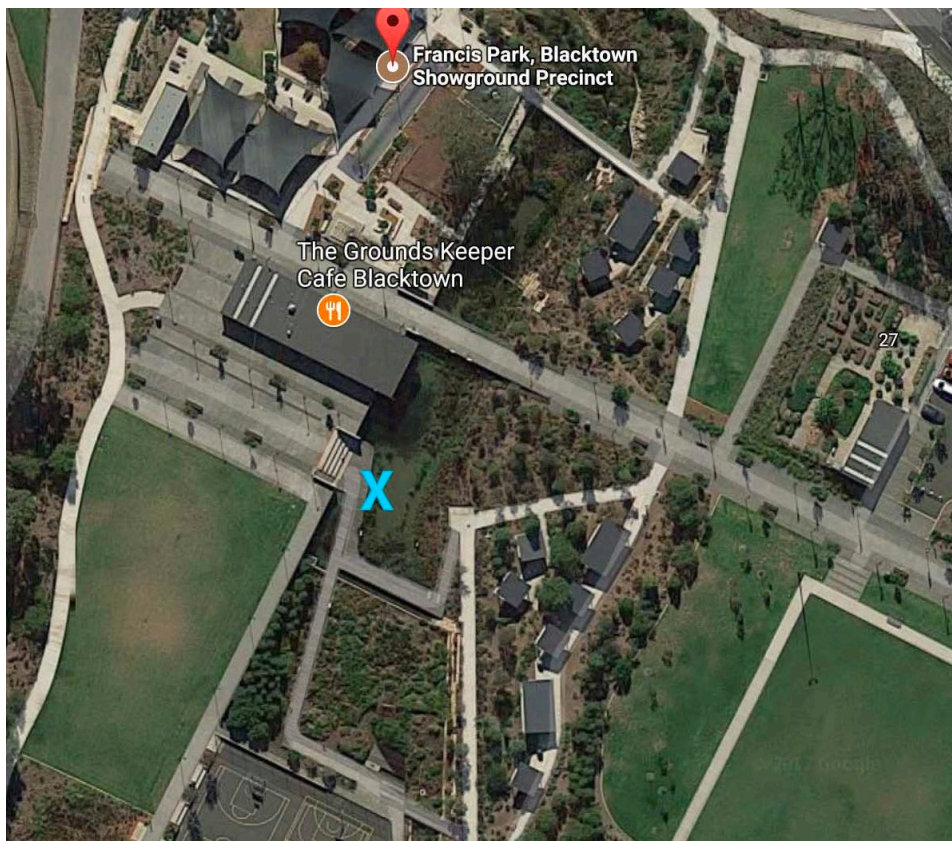
4. List 3 important features Green and Golden Bell Frogs need in their habitat.

5. Describe one of the main threats to Green and Golden Bell Frogs.

6. Can you think of another threat?

Sighting Details

Case Number: 534952	Date: 18 th July, 2017
Reporting Officer: Michelle	Reported By: Catherine Smith
Species Sighted: Green and Golden Bell Frog (<i>Litoria aurea</i>)	
Location: Blacktown Showground Precinct (Frances Park)	
Details: Individual Green and Golden Bell Frog sighted among marsh plants directly adjacent to the steps on the southern side of the Grounds Keeper Café.	
Seemingly healthy with no apparent signs of ill health.	



At Blacktown Showground

Summary

At the conclusion of each investigation, indicate whether the habitat feature supports a Bell Frog population.

Feature		HIGHLY LIKELY	POTENTIAL	UNLIKELY
Water	Quality			
	Speed			
Food	Tadpoles			
	Frogs			
Habitat	Natural Habitat			
	Predators			
People	Litter			
	Water Sensitive Urban Design			

Water – Physical & Chemical Tests

Did you know?

- The more turbid (dirty) the water, the higher the temperature
- The higher the temperature of the water, the lower the oxygen level

	RESULT	RESULT BETWEEN	SCORE	YOUR SCORE
TEMPERATURE		0 - 6°	2	
		7 - 11°	4	
		12 - 18°	10	
		19° +	2	
OXYGEN		0 - 2	0	
		3 - 4	4	
		5 - 8	10	
		9 +	4	
SALINITY		0 - 50	10	
		51 - 300	8	
		301 - 500	5	
		501 +	2	
HEAVY METALS		None	10	
		1-2	5	
		2+	0	
TOTAL SCORE				





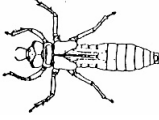





SCORE RESULTS	
0 - 12	Unlikely
13 - 23	Potential
24 - 40	Highly Likely

	RESULT	SCORE
SPEED OF FLOW	0 - 5cm/min	Highly Likely
	6 - 10cm/min	Potential
	11 + cm/min	Unlikely

Food (for Frogs)

Did you know?

- Water bugs are a food source for Green and Golden Bell Frogs
- Water bugs are sensitive to their surroundings

		SCORE			SCORE
Back Swimmer	10-15mm 	5	Water Boatman	 8-10mm	5
Damsel-fly Nymph	 15-25mm	6	Water Scorpion	 25-50mm	3
Dragon-fly Nymph	 25-50mm	5	Water Snail	 5-8mm	2
Tadpole	 10-20mm	10	Water Strider	 5-12mm	4
Diving Beetle	 5-45mm	6	Water Treader	 5mm	4
TOTAL SCORE					

SCORE RESULTS

0 - 10	Unlikely
11 - 25	Potential
26 - 50	Highly Likely

Food (for Tadpoles)

Did you know?
Tadpoles eat algae and other plant material.

	DESCRIPTION	RESULT	SCORE	YOUR SCORE
Algae	Green tinge to water or green slime present	None	2	
		Some	10	
		Lots	5	
Water plants	Soft and hard water plants growing in water.	None	2	
		Some	4	
		Lots	10	
TOTAL SCORE				

SCORE RESULTS	
0 - 6	Unlikely
7 - 13	Potential
14 - 20	Highly Likely

Habitat

Did you know?
 Green and Golden Bell Frogs need different habitat during different stages of their life cycle.

	DESCRIPTION	RESULT	SCORE	YOUR SCORE
BREEDING HABITAT	Fresh body of water, natural or constructed. Slow moving or still.	None	2	
		Some	4	
		Lots	10	
FORAGING HABITAT	Flowering plants, grasses and foliage. Plants in and near water.	None	2	
		Some	4	
		Lots	10	
REFUGE HABITAT	Rocks, crevices, plants and other material nearby to provide shelter.	None	2	
		Some	4	
		Lots	10	
CONNECTIVITY HABITAT	Connected to other wet areas, easements, laneways, vegetation, grassy open areas, etc.	None	2	
		Some	4	
		Lots	10	
TOTAL SCORE				

SCORE RESULTS	
0 - 15	Unlikely
16 - 28	Potential
29 - 40	Highly Likely

Habitat – Predators

Feral Animals - Sketch the footprints you observe then use the ID Charts to identify the animals present.

Name	Name
Name	Name

SCORE RESULTS	
2+ feral animals	Unlikely
1 feral animal	Potential
0 feral animals	Highly Likely

People – Activities

Blacktown Showground is a place designed for both people and wildlife. Tick the activities you have seen people doing at the showground today.

Activity	✓	Number of People (tally)	✓
Children playing in playground		People working (council workers)	
Adults supervising in playground		People relaxing	
People picnicking		People in cafe	
People exercising		Students on an excursion	
People walking		Other	

People – Litter

	Items	Tally	Total
Consumer Items	Pens, pencils, toys, party poppers, ribbons, hair ties, straws, lollypop sticks, cups, plates & cutlery, lighters		
Soft and Hard Plastic Items	Plastic bags, drink bottles, wrappers, packets, lids, small pieces of soft and hard plastic, bread tags,		
Glass	Bottles, jars		
Paper & Cardboard	Newspaper, magazines, brochures, paper & cardboard packaging, poppers and drink cartons		
Rubber Items	Balloons, balls, toys, elastic straps & Bands		
Wood Items	Wooden ice block sticks, pencils, matches etc		
Other	For example: Aluminum cans		

Summary

How do you think litter would impact the chance of Green and Golden Bell Frogs living in the area?

Do you think the treatment train is a good thing for our frog and wildlife? Why?

Use your results on litter and water sensitive urban design to complete the following table. Shade the box which you think reflects your findings.

SCORE RESULTS			
	Unlikely	Potential	Highly Likely
Litter	Lots	Some	None
Water Sensitive Urban Design	No treatment train	Some elements of water treatment train	All elements of water treatment train

Post-Visit Tasks : The Blacktown Bell Frog

Complete this section at school after your Brewongle excursion

1. Conduct an audit of the frog habitat near your school. Tick whether there are none, some or lots of each feature. Use your results to identify actions you can do to make your school more frog-friendly!

	None	Some	Lots
Clean (unpolluted) body of water			
Still or very slow moving water			
Range of water bugs			
Algae and other plants			
Breeding habitat			
Foraging habitat			
Refuge habitat			
Connectivity habitat			
No evidence of predators (foxes, gambusia)			
	TAKE ACTION	COULD IMPROVE	WELL DONE

SCORE RESULTS	
Mostly None	<p>Take Action! Identify ways to improve each of the features missing in your school.</p>
Mostly Some	<p>Make Some Changes! You've got some frog-friendly features, but you could work to make sure you have more.</p>
Mostly Lots	<p>Well Done! You have a very frog-friendly school yard! Keep a look-out for frogs at school!</p>

2. Use the data you collected on your excursion as well as your own research to write a list of the ways people can make Blacktown Showground a better habitat for Green and Golden Bell Frogs.
3. Use information on the link below as well as other sources to research the effects of domestic pets on native wildlife. Conduct a class debate on the topic "People should not be allowed to have domestic pets in Australia".

<http://www.environment.gov.au/resource/protecting-our-wildlife-responsible-pet-ownership>

4. Conduct online research on the Green and golden bell frog. Create a short viral video (less than 1 minute) to educate people in your community about the Green and golden bell frog. Share your video with Brewongle EEC and we will help you send it viral! Start your research with the following links, but remember to put the information in your own words.

<http://www.environment.nsw.gov.au/threatenedspeciesapp/profile.aspx?id=10483>

<http://www.environment.nsw.gov.au/resources/threatenedspecies/08468tsdsgreengoldenbro.pdf>