

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

SOP No:	01						
SOP	Frogs and tadpoles						
Scientific Name:	(Green tree frogs) <i>Litoria caerulea</i>						
Category:	2						
	<table border="1"> <thead> <tr> <th>Activity</th><th>Category</th></tr> </thead> <tbody> <tr> <td>a. The appropriate care of classroom pet frogs</td><td>2</td></tr> <tr> <td>b. Collection of frogs & tadpoles from the wild</td><td>N/A</td></tr> </tbody> </table>	Activity	Category	a. The appropriate care of classroom pet frogs	2	b. Collection of frogs & tadpoles from the wild	N/A
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Authority:	Government Schools – Department for Education and Childhood Development Animal Ethics Committee Independent and Catholic Schools – Non-Government Schools Animal Ethics Committee						
Authority Approval Date:	1 August 2010						
Last Update:	3 July 2023						
Disclaimer:	<i>This document may be updated at any time. You should check the web site regularly to ensure that you are meeting the most recent recommendations. If you note any concerns with the information provided (inadequate, incorrect) please contact the relevant AEC.</i>						
Licensing Requirement:	Not applicable unless schools are using protected frog species. This is not recommended when more suitable alternative species are available.						
Compliance Requirement:	The keeping of this species requires approval from the School Principal. It is recommended that this Standard Operating Procedure (SOP) be followed as a minimum in the provision of appropriate care and housing for this species.						

General Information:

There are over 230 species of native frogs in Australia. Frogs are amphibians and can live on both land and in water. Schools can use all stages of the frog lifecycle for student learning including viewing them in the wild. Frogs and tadpoles can be collected from the wild unless they are protected species, and they must be returned to the site of collection after use. Any collected frogs, tadpoles or eggs must be isolated from other species. This SOP relates to care of adult green tree frogs, collecting tadpoles from the wild and general tadpole care. It is recommended that Green tree frogs be sourced from pet shops or loaned from the Nature Education Centre. Staff should research the frog species they are collecting including permit requirements and ensure they can provide adequate housing and resources before commencing any activities involving frogs or their young.

Green tree frogs are cold-blooded amphibians. To warm themselves they may bask in the sun or lie on heated surfaces. To cool they may burrow, hide under vegetation, or enter water. Green tree frogs are common across the top of Australia and down the east coast as far south as Sydney. Small numbers are also encountered in the far northeast corner of South Australia. They live in a wide variety of habitats provided a permanent supply of fresh water is nearby. They are often found in outhouses and along roadsides following rain. The frogs are attracted to artificial lighting where their flying and crawling prey gathers.

Physical Attributes:

- **Size (adult):** 6-7cm for females and 6-11cm for males.
- **Weight (adult):** Varies with size.
- **Life span:** 10-20 years

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

Environment:

Housing/Space: The following list of equipment is required to provide basic housing for up to two green tree frogs. Use an all glass or plastic tank that is tall enough to grow plants (minimum 600mm x 400mm). For the base use 20mm layer of rocks or coarse gravel for drainage and a 20mm layer crushed coarse charcoal to absorb odours. Suitable plants for the tank can be potted in a minimum of 50mm of potting soil. Use stones, pebbles, and logs to recreate a natural habitat and use a water dish or small pond for a water source. A steep-sided dish or plastic lid can be used for feeding live food. A layer of leaf litter, rocks, or gravel on top of the potting mix will prevent it from adhering to the frog's skin. Ensure that the tank is large enough for the number of frogs you wish to house and tall enough that they can climb but not escape or burn themselves on the light sources provided. Care should also be taken to ensure no chemicals are sprayed near the container.

Movement: Frogs will attach to the glass, plants, and items in the terrarium. They will tend to spend lengthy periods in the same spot.

Water: Green tree frogs occur near permanent water in some of the driest parts of arid Australia. It is therefore not important to maintain a high humidity. A fresh bowl of clean water and enough moisture in the soil to keep the plants alive is all that is required. Water should be treated with a water conditioner prior to use.

Temperature: Under normal conditions an absolute minimum daytime temperature of 27°C is required. However, short periods of cooler temperatures, such as overnight, are tolerated. Longer periods of low temperatures can also be endured if the frogs are not fed or disturbed during this time. This does, however, place the frogs under stress and unhealthy frogs may succumb to disease. A thermometer should be used in the tank to monitor temperature.

Lighting: Frogs need a light (e.g., UV light) for plant growth and observation. Frogs also need a heat source (e.g., light globe) but ensure this is covered and not too low to prevent thermal burns. Incandescent light globes provide only a small amount of UV light so should be used in conjunction with commercially available UV lights. However, by far the best source of UV light is natural sunlight. Placing the tank near a well-lit window can be beneficial to the frogs and the plants, however, do not leave them directly in front of glass doors or windows as overheating may occur. Glass is an efficient filter of UV light so any artificial sources of light should be mounted directly in the tank. A false back in a terrarium filled with water and heated with an aquarium heater can also be effective. Fixing sheets of polystyrene or thick cardboard on the back and sides of the terraria helps to retain heat and the warm glass provides a suitable position for the frog to rest.

Covering: There must be a well-ventilated lid over the tank to protect frogs from external harms and prevent escaping. Mesh top or part solid/ part mesh are good and help with ventilation and moisture control.

Shelter: The aquarium should provide an area for refuge from lights, noise, and other frogs. This can be created with plants and rocky overhangs.

Cleaning: A well-established and maintained tank will need little disruption for cleaning. If plants die, they should be removed and replaced. Water dishes must be cleaned and refilled daily. A larger water source is necessary for weekend and holiday periods to allow for every second day checks. Uneaten food or dead insects should be removed, and any filters fitted should be cleaned regularly. Tanks should be thoroughly cleaned between uses for different frogs. This involves cleaning with a dilute bleach solution (5%), then rinsing and sun drying for a period of five days, prior to use.

Feeding:

Diet: Small mice, cockroaches, grasshoppers, mealworms, slaters, moths, and worms are all suitable foods. Most frogs prefer live food; however, you may be able to coax a frog into taking non-living food by simply wriggling it on the end of a pair of blunt ended tweezers. A varied diet is especially important so a breeding culture or regular supply from a pet store of some of the above food sources need to be kept.

Daily requirements: Feeding response in green tree frogs tends to be stimulated by movement. This can be used to your advantage as particularly fussy frogs can sometimes be persuaded to eat by supplying them with fast moving or flying food. Green tree frogs are nocturnal, consequently they are

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

more likely to eat if fed in the late afternoon. Feeding should occur 2-3 times a week. Tadpoles need daily feeding. Remember green tree frogs will eat anything that is small enough to fit into their mouth, including other frogs and tadpoles.

Supplementary feeding: There are excellent reptile supplements available in a powder form, which can be used to dust mealworms to help ensure that the frog is getting all the correct nutritional requirements. Never use insects that have been killed with insecticide spray.

Equipment: Blunt ended tweezers can be used to hold food if required.

Breeding:

Gestation period: Breed in Nov – Feb. laying eggs which go from tadpoles to frogs in approximately six weeks.

Number of offspring: between 200 – 2,000 eggs per year

Mating: Males can usually be identified by dark pads on the insides of their thumbs. Green tree frogs are difficult to breed in captivity.

Pregnancy: Females lay 1,000s of eggs at a time.

Handling:

Humans: Only adults should handle frogs, with children able to pet them but holding is not recommended. Always wash and wet hands before picking up frogs. Skin should be free of soaps or chemicals when handling, as frog skin is sensitive and can absorb these chemicals through their skin. To hold a frog using both hands pick the frog up by supporting the front and back legs, enclosing them in the palm of your hand. Only apply as much pressure as is necessary. Handling should be kept to a minimum as it only places extra stress on the frogs. Hands should be washed after handling as well, as frogs secrete chemicals from their skin that may be harmful to people. People should not tap on the glass tanks.

Equipment:

Transport: Use small moist and ventilated containers. Do not leave for extended periods in hot or cold conditions. Do not transport on days that are over 32 degrees.

Hygiene:

Thoroughly wash hands with soap and running water for at least 15 seconds after working or handling frogs. Dry hands with clean paper, cloth towel or air dryer. Turn off the tap with the paper towel if possible.

Signs of Illness:

Indicators:

- not eating;
- regurgitation;
- listless;
- sores;
- weight loss;
- behavioural changes;
- discharges from nostrils, eyes, mouth, and anus;
- trouble moving;
- limb deformities; and
- skin colour changes.

Common conditions seen in frogs include:

- Abnormal changes in skin colour: Small white spots on the frog's skin are normal but a change from green to brown can be a sign of distress from diseases, handling, or a poor environment (although camouflage can also play a role in colour changes). In hot weather frogs can desiccate in less than 24 hours without access to water hence a clean supply of fresh water must be always available.
- Eye infections: Polluted water can often be a cause. This appears as a cloudy haze over the pupil. It can be overcome by bathing the eye twice daily in a saline eye wash solution and keeping them in a warm environment (+33°C). Consult your Veterinarian for further advice.
- Regurgitation: If temperatures are too low for a day or two after frogs have been fed a large meal, they may regurgitate what they have eaten. Monitor for weight loss or changes in behaviour and consult with your Veterinarian for further advice.

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

- Red Leg (*Aeromonas spp.*) is the most common disease encountered in captive frogs. It can be fatal, however, if symptoms are recognised early many frogs recover with no ill effects. Red Leg is caused by some type of stress – over-crowding, poor hygiene, extended periods at low temperatures. While frogs are active and being fed, all cause stress that can lead to the onset of Red Leg symptoms. Red Leg in green tree frogs appears as a reddening of the inner thighs, a dull lustre to the skin, with a brown discolouration to the belly. Affected frogs often remain inactive on the bottom of the cage, refusing food. Individuals with Red Leg should be isolated immediately and placed in a small container with half a centimetre of water in the bottom. The lid should have a few small holes for ventilation. Place the container in an area that provides a constant temperature of about 33°C. Change the water regularly and do not feed (frogs can survive lengthy periods without food). It may take a few weeks for the frog to respond and while this is not always successful there is a high rate of success with serious cases. Consult your Veterinarian for condition confirmation and further advice.
- Rickets is a bone disease that is also a frequent problem, particularly when frogs have not been maintained under the right conditions from a small age. It can easily be recognised by the posture of a frog. The rear legs become soft and bowed, they lose the ability to jump large distances and struggle to climb vertical surfaces. A poor diet and a lack of UV light are the primary causes. The faster a frog grows the more susceptible it becomes to rickets and the more important it becomes that the correct resources be maintained. Consult your Veterinarian for condition confirmation and further advice.

Treatments:

Schools are encouraged to establish a relationship with their local Veterinarian or animal industry representative (e.g., pet shop staff) familiar with frogs. These contacts can be used for disease diagnoses, treatment options and dietary, husbandry and welfare advice. Veterinarians can also assist with emergencies particularly when euthanasia is needed. Many of the conditions encountered in amphibians are a result of poor husbandry practices and inappropriate environmental conditions.

Euthanasia:

When an illness or injury is such that recovery is unlikely then a frog must be euthanised. Schools should contact their local Veterinarian to discuss emergency treatment options prior to an event occurring when keeping frogs and/or tadpoles on site. Any **adverse event** including death must be reported to the NGSAEC using the **Adverse Events form**. Forms must be returned to the NGSAEC within seven days of the event occurring

Disposal/fate planning:

When no longer required frogs must be rehomed. They must **NEVER** be released into the environment and waterways. Bodies must be disposed of correctly in accordance with local council regulations.

Holiday and weekend care:

Frogs can be sent home for weekend or holiday care with students providing consent is received from the school principal and the parents. Staff should provide carers with animal care and record keeping instructions, emergency contacts and provide appropriate equipment and food. Animals must be checked daily, records kept, and any problems reported to the school immediately whether kept onsite or taken offsite.

Approved activities:

Where an activity is not listed in this SOP, approval must be sought from the Non-Government Schools Animal Ethics Committee and confirmed before it can be undertaken.

a. THE APPROPRIATE CARE OF CLASSROOM PET FROGS

Activity:

Category 2

Category:

To instruct students on the care and husbandry needs of frogs housed in the classroom.

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

Schools must ensure they can provide adequate, housing, care and husbandry needs for frogs before acquiring them for their classrooms. This includes meeting ongoing live feed requirements.

b. COLLECTION FROGS AND TADPOLES FROM THE WILD

Activity:

Schools should not be taking frogs/tadpoles if they are not 100% sure about the identification of species being caught. Taking of protected species is prohibited. Only two species of frog are protected in South Australia as of October 2019:

1. The Golden Bell Frog - *Litoria raniformis*
2. The Smooth Frog - *Geocrinia laevis*

A permit to take is required to collect these species from the wild. All other frog species remain unprotected, and a permit is not required to keep or sell these species. No permit is required to take them from the wild in South Australia, however they cannot be collected in National Parks, reserves or on private property without consent. If importing frogs from another State or Territory, they must have been legally acquired in that State or Territory. You will need to get an export permit from the corresponding State or Territory wildlife Agency prior to consignment. School must ensure they stay up to date with permit requirements when using and keeping amphibians for school activities.

Frogs/tadpoles taken from any waterways must be returned to the same site. Frogs/tadpoles taken must be kept in isolation during their life in captivity. This includes from students who may have frogs and fish at home. Schools should be following environmental guidelines, including release conditions so as not to contribute to the spread of fungal diseases (e.g., Chytrid). Students need to be informed about the legal issues of 'taking' from the wild.

The minimum hygiene requirements for the collection, observation, and temporary housing of tadpoles in schools

1. The collection of tadpoles is to be undertaken by the class teacher either with or without student participation. If multiple classes are interested in the activity, it is strongly recommended that a single collection event be organized.
2. Students must not be encouraged or asked to collect tadpoles and bring them to school.
3. Collection is to be made from a single site only, e.g., one pond/creek/dam. Under no circumstances may tadpoles be collected from multiple locations or from National Parks due to the potential for disease spread.
4. On metamorphoses, frogs are to be returned to the exact point of collection. Frogs are not to be distributed to students, staff or other parties but are to be released at the point of capture.
5. At the completion of the activity all contact equipment, including the housing tank, tank furniture, filtration equipment, water containers, food dishes, collection nets must be sterilised. It is recommended that this equipment is cleaned with a dilute bleach solution (5%), rinsed and sun dried for a period of 5 days.

It is important that teachers not only conduct this procedure carefully but explain to students its significance.

TADPOLE CARE:

Tadpoles are poikilothermic, that is, the temperature of the environment determines their body temperature.

Housing/Space: Short, wide plastic containers, trays or aquariums are suitable to house tadpoles. It is recommended to have soil from the location

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

Environment:

the tadpoles were collected from on the bottom (about 15mm deep), water plants and protruding rocks to allow the developing frogs to emerge from the water. The water need not be deep, but a large surface area is necessary if an aerator is not used. The tank should allow for about 1L per adult frog. Keep the container away from direct sunlight to prevent the water from becoming too hot and killing the tadpoles but an hour or so of daily sunlight is essential for development. During hot weather, water may need to be added to compensate for evaporation. Care should also be taken to ensure no chemicals are sprayed near the container. The tank should be covered to protect from predators.

Temperature: ideal water temperature range is 18-22°C.

Water: The water used for tadpoles needs to be absent of chlorine. This means that rainwater can be used or if town water is used then it must be aged. Water can be aged by allowing it to stand in an open container for 24 hours prior to use so that the chlorine evaporates or by adding commercially prepared aging solutions. Water conditioners can also be used.

Cleaning: To keep the tank clean, 30-50% of the water should be changed daily. The easiest way to do this is to mark, on the side of their tank, a line showing 50-70% of the water remaining in the tank. Place a dip net across the mouth of the jug to ensure that tadpoles are not inadvertently removed with the water. The removed water should have bleach added to it prior to disposal by pouring down the toilet or onto the garden. Soiled food should be removed regularly so as not to affect water quality.

Diet:

Tadpoles should be fed once a day. Feed only enough to be eaten within one hour. If there is food left at the end of this time, remove it and feed less the next day. Suitable foods include algae disks, fish flakes or boiled lettuce, broccoli, or baby spinach. Lettuce must be boiled so that the plant cells are broken down.

Treatment:

Schools are encouraged to establish a relationship with their local Veterinarian or Animal industry representative (e.g., pet shop staff) familiar with frogs. These contacts can be used for disease diagnoses, treatment options and dietary, husbandry and welfare advice. Health problems tend to arise in tadpoles when poor water quality or inappropriate feeding occur. The volume of water that tadpoles have access to can affect their growth rate, hence they should not be overcrowded. As the tadpoles develop legs, their gills recede, and they are then unable to breathe under water. At this stage, the tadpoles need areas where they can sit above the water line. Records must be kept when keeping tadpoles, including documenting water changes, feeding and comments about the behaviour and development of the tadpoles.

Holiday and weekend care:

Tadpoles can be sent home for weekend or holiday care with students providing consent is received from the school Principal and the parents. Staff should provide carers with animal care and record keeping instructions, emergency contacts and provide appropriate equipment and food. Animals must be checked daily, records kept, and any problems reported to the school immediately whether kept onsite or taken offsite.

Resources:

Amphibian Research Centre

- **Frogs and permit requirements**
frogs.org.au/arc/legal.html
- **Keeping frogs care sheets**
frogs.org.au

Non-Government Schools Animal Ethics Committee - STANDARD OPERATING PROCEDURES

How do I take care of tadpoles? RSPCA Knowledgebase
kb.rspca.org.au/knowledge-base/how-do-i-take-care-of-tadpoles/

Department of Environment & Water – Government of South Australia – Licenses and Permits
<https://www.environment.sa.gov.au/>

Natural Resource Management South Australia – Engaging with Nature – Frogs. Teacher Information Pack
<https://www.landscape.sa.gov.au/>

How a tadpole transforms into a frog video
www.youtube.com/watch?v=qmlaclb3K2o

Pet care – Green Tree Frogs – Sydney Exotics and Rabbit Vets
www.exoticsvet.com.au/pet-care

Green Tree Frogs Fact Sheet – Rous County Council
<https://www.landscape.sa.gov.au/>