

FROG CALL



THE FROG AND TADPOLE
STUDY GROUP OF NSW INC

SEPT
NUMBER 25 - JULY 1996
PO Box A2405
Sydney South NSW 2000

THE NEXT MEETING

Friday 4th October at 7:00 pm for a 7:30 start
at the Australian Museum (William St. entrance)

SPEAKERS:

- 7-30pm **Extraordinary Meeting** Re-election of Committee.
7.45pm **Hal Cogger** Frog diversity of the Indo-Papuan Region.
8.30 pm **Dave Tyrrel** Tadpoles-an ongoing Odessey.
Everybody My 5 favourite frog slides or 5 Minutes.

Aim to finish at 9.30pm - tea coffee & biscuits

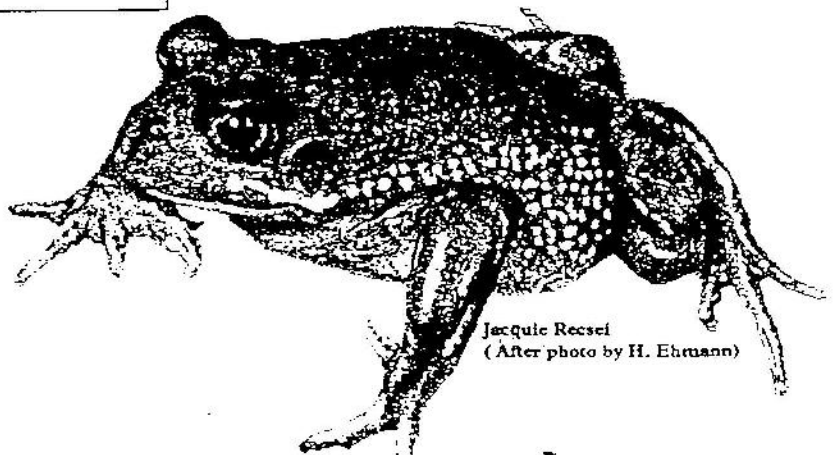
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Insert: your membership form	
Insert: field trip information	

REGULAR FEATURES

News and announcements, field trips, projects, refreshments!
Auction, discussions, gossip, welcome table, things you can buy!
Bring a visitor!

The giant Burrowing frog, *Heleioporus australaicus*



Jacque Recsei
(After photo by H. Ehrmann)

NOTICE OF EXTRAORDINARY MEETING

Following discussions of the newly "elected" committee it was decided that the election process held at the A.G.M. appeared to be flawed. Under our "Rules of Association", we have to elect members to predetermined offices. We intend to make the positions more flexible, so this does not cause any inconvenience to future committee members. Another election is needed to be held to re- re-elect the committee for this year. Hence, we are holding a brief "extra-ordinary" meeting immediately before our next meeting at the Museum in order to do so. We are urging anyone who would like to nominate for a committee position, to please use the form included with this newsletter. Note that by our constitution that all nominations received one week or more prior to the meeting receive preferential status so that if a position has been nominated for by this time, no new nominations can be accepted after this. Therefore, get your nominations in early and specify the position you are nominating for. We are certainly looking for people to join and provide fresh insights and ideas and so do not be afraid to nominate if you are interested.

Our apologies go to the two newly elected members of the committee, Gabrielle Scott and Michael Harvey, for the inconvenience that it may have caused them.

"The Interim Committee"

THE LAST MEETING (12. 4. 96)

Noel Tait provided all attending with an intriguing account of life in a frogs rectum. Despite problems with the recalcitrant technology, Noel managed to display some interesting footage of the micro-organisms which live on the "unwanted" material ejected by a frog and gave an informative lecture on the effective immune systems displayed by the "lower" vertebrates.

Ken Griffiths was the speaker in the "Frog of the Meeting" session and gave us his account of the look-alike Peron's Tree Frog and Tyler's Tree Frog. As usual, Ken displayed a number of excellent slides of these pretty frogs which gave everyone a good idea of the few differences that can be used to distinguish these two species.

There were also the usual complement of "five favourite frog slides". Thankyou to the people who brought their slides - more please! The raffle and auction: Much to Arthur's amazement, the highlight of the auction were the series of plants brought and not his prized book! Martyn Robinson, displaying his undoubted talents as a game show hostess, managed to raise the enthusiasm and prices of the bidders with his "hand wavings" and displays of appreciation directed at the plants. The bank account looks significantly healthier due to his and the buyers efforts. Many thanks to all contributors.

F.L.

FROG WEEKEND IN THE BLUE MOUNTAINS

Danny Wotherspoon has indicated his intention to run another November frog weekend at his cottage in the Blue Mountains. He is offering a special rate on a weekend package which includes a dinner and frogging. Places are limited so be quick.

FIELD TRIPS

Yes the weather has finally begun to warm up again and the time has come to dust off the gum-boots and head on out to see the spring collection of frogs on offer. The field trip co-ordinator has himself warmed up enough to organise a series of events for you entertainment. For more details see the inserted sheet, but in brief they are as follows:-

September

Royal National Park
Wahroonga Trig

October

Darkes Forest

November

Olney State Forest
Dorrigo (west of Coffs Harbour)

December

Smith's Lake (Myail Lakes area)

WILDFLOWER SHOW

The FATS Group had a stand at a show held at the Ku-ring-gai Wildflower Gardens. The weather was beautiful, but the interest was slow. This was at least in part due to those dratted cute flying foxes held by the adjacent WIRES exhibit. One look at the interesting live animals immediately attracted all attention away from us. It just goes to prove how valuable it would be for us to get an exhibitors license to show a few live frogs (the very live looking cane toad attracted a lot of attention). Still, we managed to draw out four new members and sell a number of frog facts packages which will help to spread our message around. Thanks to all who attended the stall.

NOTICE TO MEMBERS (NEW OR OLD)

It has become obvious to the Committee that a number of people who have joined the FATS Group over the last year or two have had a rough time in terms of receiving newsletters and/or Herpetofaunas. The reasons for this have been addressed and this should not happen again. More importantly, if you are one of these people or know of someone then please let us know. This is particularly the case for people who did not rejoin the group because they were disenchanted with their treatment. We would like to make this up to you and so please contact Lothar, Jacquie or Frank so that we can sort out the

problem. This is an important issue for the FATS Group and so please try to help us.

Thankyou to the new and old members who donated money, This is much appreciated -especially by our treasurer Arthur.

FROGBITS & TADPIECES

Central Coast Reptile and Frog Group. Did you know that there is now a Central Coast Reptile and Frog Group? Meetings are held at the University of Newcastle, Central Coast Campus, Brush Road, Ourimbah Room F1.38, located in the Science Laboratories at 7.00 pm on the 3rd Saturday of every ODD month (Jan, March, May, July, Sept, Nov.). Parking available in the WEA section or the main car park. For information write to Membership Officer, Central Coast Reptile and Frog Group, PO Box 828, Gosford, 2250, NSW.

Frog Call Tapes. Tapes of the Frog Calls of the Greater Sydney Basin produced by the Sound Productionist Dave Stewart will be available again at our next meeting for \$15 each. This is a considerable saving over retail price. The text was produced by members of our group and spoken by Richard Morecroft. The tapes are highly recommended by the group as a way of getting to know your frog calls, ready for the frogging season about to start!

Michael Mahony's TAMS lecture. Michael Mahony's talk for the TAMS frog lecture series which accompanied the Frog Exhibition in at the Australian Museum was based on three personal stories about "Helen, Helen and Alistair", who can basically be classified as volunteers in the frog cause. Michael emphasised the amount of field work required by individuals in order to gain information about the ecology of different frog species, so that we can even start to assess the impacts different activities will have on a species and be able to discuss conservation management.

The first Helen was an international visitor helping on an Earthwatch project looking at the Hip-Pocket Frog, *Assa darlingtoni*. The project started in dry weather, and there was little activity, so Michael was wandering from volunteer to volunteer, cheering them up with Minties. He found Helen playing tug-of-war with a Funnel Web spider, blissfully unaware of the potential of this spider. The second Helen helped count, measure etc. *Mixophyes iteratus*, the Giant Barred Frog, and misjudged the depth of a pool in the wee hours of one morning...The third "victim" is an avid naturalist, who gets dragged all over the country, night after night, by his father, who is a sound productionist. We're talking about Alistair, of course. Well, after several very late nights chasing *Mixophyes fleayi* (another Barred Frog) and being the only person who ever found one, he was found curled up, asleep on the path. Michael's story ended there. Jacque and I remembered a different ending - Alistair is too big to carry out (he was fourteen!) so we had to coax him out of the forest, using tricks to keep him on his feet. Meanwhile, Michael and his father, David, oblivious to all of this, put the world to rights. There is plenty of field work to do for us all out there!

Glen Ingram's TAM's lecture on Frogs. Glen's talk was a wonderful wallow in the pure joy of frogs. Along with his

obvious desire to impart to us the basic appreciation of frogs for their own sake, he packed in information about the diversity of Australian frog life cycles, parental care, and his concerns about the noticeable declines in many frog populations. He warned us right at the beginning that frogging is addictive, but his talk did a bad job of curing us from the affliction!

Catchment Management. A Sydney Council ordered some road signs to advise motorists of their responsibilities to protect the catchment from pollution. The Frog and Tadpole Study Group was approached by the Roadsigns company for a photograph of a frog with a "red head and red dots on its back". The Council wanted one of those in particular. We were able to help with a photograph of a Red-Crowned Toadlet.

K.T.

Internet Sites.

There's this great site

<http://www.peacefrogs.com/clothing.html> - you have to have a look at these frogs T-shirts etc. they are truly wild...

<http://ftpt.br/amazonas/bdff/frogs.html>

The ecology of Frogs and Lizards and Snakes in continuous Rainforest in Central Amazon.... (Zimmerman)

<http://osprey.anbg.gov.au/projects/frogs/anbg-frogs.htm>
Frogs of the Australian National Botanical Gardens-great illustrations and general info on local frogs (Ric Longmoore).

The Victorian Frog Group.

"In the Spotlight" is the newsletter of the Victorian Frog Group.

This newsletter is highly recommended: a good read with plenty of meaty information. Copies of this newsletter will be available for your perusal at the next meeting. Recently one of the editors Gerry Marantelli and Natalie White visited NSW and Queensland. The frog details of their trip are written up Vol. 2 Number 3, as are the results of "A Study of Vertebrates Transported into Victoria in Produce." If you would like to receive this newsletter, membership application forms will be available at the meetings or write to:

Victorian Frog Group
P.O. Box 424, Brunswick 3056
Ph. (03) 354 4718

Please contribute to our Newsletter, we are very happy to receive anything froggy, especially about frogs or froggy experiences in your area.

A member sent in a piece about frozen frogs in Canada which will be in the next newsletter.

J. R.

The Science Page

with Michael Harvey

Sensitive New-age Frog.

Frogs are often thought of as primitive creatures, whose evolutionary line served simply as a stepping-stone between fish and reptiles (and thence on to mammals and us). However it is important to remember that frogs have been 'evolving' for as long as we have. Just because they have a basic body-plan which has been around for 160 million years doesn't mean that they stopped developing that plan. In fact frogs could be described as being more highly evolved than we are - they've had a lot longer to become good at being frogs than we have at being people. One of the aspects of a frog's life that may seem at first glance to be limited is their senses. They rely primarily on vision to catch their prey, yet they appear not to react unless they are presented with a moving target. Obviously they can hear, or there'd be no point in croaking. But what about other senses. How do frogs experience the world?

Frogs have your five basic senses; vision, hearing, taste, touch and smell. As amphibians, with porous skin, they also need to be able to respond quickly to their environment. Is it too dry, too cold, or too full of nasty chemicals? And did you know that some frogs can detect ultra-violet and infra-red light (these are the types of light beyond either end of our visible spectrum)? But let's start with the sense to which we humans relate best - vision.

Sight

Frogs generally have prominent eyes, with a wide field of vision. Their eyes can pick up distant moving objects as well as close ones, and they naturally see well at night. Many frogs have "catlike" eyes, with a pupil which can contract to a slit (vertical or horizontal depending on the species) in bright light. To focus their eyes, frog lenses actually move back and forth (our lenses, and those of reptiles, birds and mammals change their shape in order to focus). Some species of frog also have a 'third eye' on top of their head. This organ is sensitive to light, and may help the frog to use the sun in navigation.

In order for them to leap accurately and catch food, they must be able to correctly gauge the distance between objects. As I said in the last 'Science Page' (on feeding behaviour) prey movement is the primary trigger for feeding. However frogs must also be able to determine the size of the prey (otherwise we really might see them stuck to low-flying aircraft). Once a potential meal is sighted frogs don't swivel their eyes to follow their prey's movement. They move their head, or more often their whole body, to line it up for a strike.

Smell and Taste

Another sense which helps frogs to find their food, as well as giving them information about their immediate environment is their sense of smell. As far as food detection is concerned scent is secondary to vision, but among the amphibians salamanders and toads seem to use their sense of smell more than frogs do. For example, Cane Toads have been observed

feeding on dog food pellets, which they must detect by scent and taste. Frogs are also sensitive to "bad" tastes. Insects which release unpleasant chemicals are often avoided - particularly if the frog has experienced them before. Frogs can even go to the extent of turning their stomachs inside out to get rid of an unpleasant meal.

Smell and taste can be very useful under water, and tadpoles make much greater use of chemical detection to find food than adult frogs. Toad tadpoles have been shown to flee in response to alarm chemicals released by injured tads. Tadpoles also use scent to detect predatory fish and get to cover.

Sound

Frogs have well-developed ears, with an eardrum and sound-transmitting bones in the middle-ear. Obviously one of the most important uses of hearing is the detection of the calls of other frogs. Not only must frogs be able to hear each others' calls, they must also be able to decipher them. How do they know the calling frog is the same species? What direction is it coming from? How far away is it? Some frogs are able to gain even more information. The size of the frog affects the tone of the call, then other males can work out if they stand a chance in a fight and females can pick males that sound strong and tough. Males also use each others' calls to space themselves out into regularly sized territories.

Frogs usually use high-pitched sounds in their calls, as these are transmitted best through air. Low-frequency sounds are picked up via the ground, and would include the sounds made by approaching predators. Frogs also communicate with each other when they are in direct contact. 'Release calls' made by the female frogs to signal the end of mating are transmitted by body vibrations or low-frequency calls.

Other senses

Frog skin is an amazing organ, and is probably worth a "Science Page" of its own. It is capable of absorbing and releasing water, providing a way to prevent water loss, secreting chemicals that help with temperature regulation and poisons that protect the frog against predators. It is also sensitive to environmental changes and unpleasant chemicals. Frogs sense temperature levels and dryness through their skin, and take steps to control them (by basking to keep warm, or retreating to shade if it is too hot). To preserve water frogs may reduce the body surface exposed to the air by tucking their legs under their bodies - for an example, look at a resting Dainty Green Tree Frog (*Litoria gracilentia*).

Some frogs and tadpoles also possess a lateral line system down their flanks (as do fish). This is a sense system capable of detecting pressure changes under water. These pressure changes could come from moving or stationary objects in the water, so this system is another way of helping a frog/tadpole find its way around and avoid predators.

So frogs really do have the full range of senses to draw on. We can never actually experience the world through a frog's eyes, ears, nose, mouth or skin. However we can be pretty certain that they all combine to give a frog all the information it needs to go about its daily chores, where to do them and who to avoid.

Michael Harvey

The Tadpole Page

with Gabrielle Scott

FROGGY FIND A WORD

Circle the 62 words hidden in this puzzle to find the name of the mystery frog. The words can be found horizontally, vertically, diagonally and backward. The leftover letters spell the scientific name of the mystery frog. Solution- 11,12.



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

- | | | | |
|-----------------|----------------------------|---------------------|-------------------|
| Algae | Field Trip | Logs | Swamp |
| Amphibian | Flies | Marsh | Tadpoles |
| Amplexus | Frog Call | Metamorphlings | Terrestrial |
| Arboreal | Frog Watch | Moisture | Toad |
| Bags | Froglet | Moss | Torch |
| Boots | Frogs | Moths | Vines |
| Conservation | Gastric Brooding Frog | Net | Vomerine Teeth |
| Corroboree Frog | Giant Burrowing Frog | Plants | Waders |
| Creek | Great Barred Frog | Pond | Wallum |
| Dam | Green And Golden Bell Frog | Rain | Warm |
| Diet | Habitats | Red Crowned Toadlet | Water |
| Eggs | Herpetology | Rocks | Waterholding Frog |
| Environment | Humidity | Spawn | Wetland |
| F.A.T.S.G. | Insects | Spiders | Worms |
| Ferns | Lagoon | Spotlight | |
| Field Guide | Lichen | Stream | |

Frog threat weed-killer to face waterways ban

By environment writer NATASHA BITA

A COMMON weed-killer, the herbicide glyphosate, will be banned from use near waterways within 12 months, following scientific evidence it can harm tadpoles.

The National Registration Authority, which is to review the health and environmental safety of 500 agricultural and veterinary chemicals this year, will announce details of the ban today.

The NRA's executive manager, Mr Greg Hooper, said yesterday laboratory tests indicated the surfactant (the substance which ensures the chemical disperses properly when sprayed) used in most glyphosate formulations could harm tadpoles.

Manufacturers would be given 12 months to introduce "frog-friendly" formulations, or label their products to warn they must not be used near waterways.

"It will be illegal to use it in situations where there may be some contamination on the edges of lakes and streams," Mr Hooper said.

"Some laboratory studies done by the West Australian Department of the Environment showed the surfac-

tants in glyphosate products could have an effect on tadpoles under laboratory conditions.

"We don't really have any evidence that glyphosate is having an adverse effect on frog populations in the field."

Mr Hooper said 30 companies manufactured 87 products containing glyphosate, including the brand Round-Up by Monsanto.

He said the NRA would review about 12 per cent of the 4500 chemical products on the market this year, as some had been approved for use in the 1950s.

He said the first five chemicals to be investigated were endosulfan, a cotton pesticide suspected of poisoning fish; atrazine, a forestry herbicide suspected of harming human health; and mevinphos, parathion and parathion-methyl, toxic chemicals used in horticulture that pose a potential hazard to farm workers.

The results of the studies are due for release late this year, and another group of chemicals will be chosen for testing in September.

Scientists round up Vic herbicide-resistant weeds

Cathy Bolt

One of the most significant cases of resistance to herbicides in the world may have been detected in Australia, with weeds on a farm in Victoria appearing to have developed a tolerance towards the top-selling chemical, glyphosate.

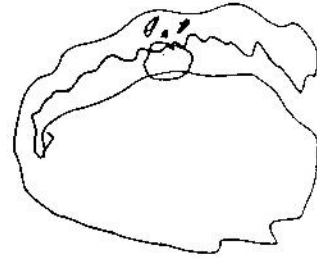
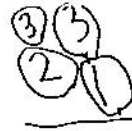
A senior weed scientist, Dr Steve Powles, said yesterday if the glyphosate resistance was confirmed it would be a major development given its ranking as the most important herbicide in the world, including in Australia, and because it had been used for 20 years without any incidence of weed tolerance.

But in practice it would not mean

an end to the effectiveness of the chemical - most widely sold here by Monsanto under the trade name Roundup - since the problem could be addressed by farmers rotating it with other herbicides and cultivation.

Dr Powles, director of the Adelaide-based Co-operative Research Centre for weed management, said Australia had the highest incidence of herbicide resistance in the world.

Monsanto Australia's technical director, Dr Bill Blowes, said the company was working with Charles Sturt University to confirm the cause of the unsatisfactory level of control in the two pot trials it had done with the apparently resistant ryegrass plants.



This is a frog

Adrianna 19.6.96.

The Interim Committee

Lethar Voigt	President
Martyn Robinson	Chairman
David Millar	Secretary
Arthur White	Treasurer
Philip Green	
Michael Harvey	
Giselle Howard	
Frank Lemckert	
Jacquie Recsei	
Gabrielle Scott	
Karen Thumm	

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 (02) 9599 1161
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 (02) 9320 6065 (w)
 (02) 9897 5050 (h)
 (02) 9871 6941 (w)
 (02) 9482 1017

DON'T FORGET THE EXTRAORDINARY MEETING TO BE HELD IMMEDIATELY BEFORE THE NEXT GENERAL MEETING. IF YOU WOULD LIKE TO STAND FOR A POSITION ON THE COMMITTEE THEN PLEASE SEND IN YOUR SIGNED FORM AND PREFERABLY FOR YOU AT LEAST A WEEK BEFORE THE MEETING TO GIVE YOURSELF A CHANCE TO BE ELECTED.

And our thanks to the Australian Museum, for the postage.



Your FATS Group

We hold six informative, informal, topical and practical meetings each year at the Australian Museum (William Street entrance) in Sydney. Meetings are held on the first Friday of every even month (February, April, June, August, Oct. and Dec.) at 7 pm for a 7:30 start. Visitors are welcome. We are actively involved in monitoring frog populations and in other frog studies, and we produce the newsletter *FROGCALL* and *FROGFACTS* information sheets.

RECENTLY SEEN OR HEARD FROGS

Thank you for taking an interest in frogs. They need all the help they can get, especially yours.

Please complete *one* of these forms at each location you visit. Only fill out what you can - the first box is essential. The entries are easy to follow.

Please send the form and any photographs of frog(s), tadpole(s) or habitat, and a tape recording of the calling frog(s) that you have made to:

The Frog and Tadpole Study Group

PO Box A2405

SYDNEY SOUTH NSW 2000

Thanks for your help and happy frogging!

(tick as appropriate)

COLLECTOR(S) AND LOCATION: ESSENTIAL!

YOUR NAME:	DATE:	START TIME: FINISH TIME:
YOUR ADDRESS AND PHONE NUMBER:		
LOCATION & DESCRIPTION: (enough information for another person to find the site)		

SITE DESCRIPTION

SURROUNDING DOMINANT VEGETATION	
HABITAT (tick or describe in COMMENTS if you are not sure)	<input type="checkbox"/> Rainforest <input type="checkbox"/> Wet Sclerophyll <input type="checkbox"/> Dry Sclerophyll <input type="checkbox"/> Woodland <input type="checkbox"/> Exotic <input type="checkbox"/> Swamp <input type="checkbox"/> Riparian <input type="checkbox"/> Alpine <input type="checkbox"/> Heath <input type="checkbox"/> Grassland <input type="checkbox"/> Urban <input type="checkbox"/> Other
	COMMENTS:
HABITAT DISTURBANCE SEEN	<input type="checkbox"/> Logging <input type="checkbox"/> Clearing <input type="checkbox"/> Vehicle <input type="checkbox"/> Drainage <input type="checkbox"/> Stock <input type="checkbox"/> Other
TREE HEIGHT (estimate)	<input type="checkbox"/> 0-5m <input type="checkbox"/> 6-10m <input type="checkbox"/> 11-20m <input type="checkbox"/> 21-30m <input type="checkbox"/> >30m
GROUND COVER (tick the one to three most common ones)	<input type="checkbox"/> Rock <input type="checkbox"/> Log <input type="checkbox"/> Sand/Soil/Gravel <input type="checkbox"/> Litter <input type="checkbox"/> Grass <input type="checkbox"/> Other Low veg.
GENERAL COMMENTS	(photos welcome)

DETAILED SITE DESCRIPTION

SITE AT WHICH FROGS, TADPOLES, EGGS ARE FOUND	
DETECTION METHOD(S):	<input type="checkbox"/> Heard <input type="checkbox"/> Seen <input type="checkbox"/> Active <input type="checkbox"/> Uncovered <input type="checkbox"/> Dug up <input type="checkbox"/> Pitfall <input type="checkbox"/> Other
WEATHER: RAIN: (tick one or more)	<input type="checkbox"/> Rained 7 + days ago <input type="checkbox"/> Rained 6 to 24 hours ago <input type="checkbox"/> Rained 1 to 7 days ago <input type="checkbox"/> Rained 0 to 6 hours ago
CLOUD COVER	<input type="checkbox"/> Heavy <input type="checkbox"/> Moderate <input type="checkbox"/> Sparse <input type="checkbox"/> None
	WIND STRENGTH: <input type="checkbox"/> Strong <input type="checkbox"/> Medium <input type="checkbox"/> Calm
AIR TEMPERATURE: WET BULB _____ °C DRY BULB _____ °C	WATER TEMPERATURE _____ °C
WATER QUALITY:	<input type="checkbox"/> Still <input type="checkbox"/> Flowing Comment: _____
COLOUR:	<input type="checkbox"/> None <input type="checkbox"/> Stained TURBIDITY: <input type="checkbox"/> Clear <input type="checkbox"/> Cloudy
UNPLEASANT SMELL:	<input type="checkbox"/> Strong <input type="checkbox"/> Little <input type="checkbox"/> No COMMENT: _____
FINE FROTH:	<input type="checkbox"/> Strong <input type="checkbox"/> Little <input type="checkbox"/> No COMMENT: _____
WATER BODY DESCRIPTION:	<input type="checkbox"/> Lake <input type="checkbox"/> Pond <input type="checkbox"/> Swamp <input type="checkbox"/> Puddle <input type="checkbox"/> Ditch <input type="checkbox"/> River <input type="checkbox"/> Stream <input type="checkbox"/> Creek <input type="checkbox"/> Seep <input type="checkbox"/> Tree Hole <input type="checkbox"/> Other _____
	<input type="checkbox"/> MAN-MADE <input type="checkbox"/> NATURAL COMMENT: _____
SITE WIDTH: (m)	SITE LENGTH: (m) MAXIMUM DEPTH: <input type="checkbox"/> <1m <input type="checkbox"/> 1-2m <input type="checkbox"/> >2m
COMMON SUBSTRATE IN WATER:	<input type="checkbox"/> Mud <input type="checkbox"/> Silt <input type="checkbox"/> Sand <input type="checkbox"/> Gravel <input type="checkbox"/> Rocks <input type="checkbox"/> Boulders <input type="checkbox"/> Bedrock <input type="checkbox"/> Leafpack <input type="checkbox"/> Detritus <input type="checkbox"/> Other
EMERGENT VEGETATION COVER	<input type="checkbox"/> present <input type="checkbox"/> absent COMMENT: _____
EMERGENT VEGETATION (any name(s) or description):	

