Project Update: April 2010

The eastern Solomon Islands comprise the main islands of Guadalcanal, Malaita, and Isabel. These three are large oceanic islands, with varying degrees of habitat that support a diverse anuran fauna. Guadalcanal comprises swampy marshlands, and grasslands to the north, rolling hills, lowland rainforests, ridge forests, and high montane rainforests. Gaining access to forest areas on Guadalcanal has been much more difficult than other parts of the Solomon Islands, due to compensation demands and landowner grievances against large mining and prospecting companies.

Location and Description of Sites

A few locations were surveyed during the course of the fieldwork. These included at least four sites on Guadalcanal, and other sites on Gatokae, Vangunu, Kolombangara and Vella Lavella. Access to Malaita and Isabel was not possible during the course of the search due to landowner access and time.

Guadalcanal survey

We surveyed four areas on north Guadalcanal: (1) Betikama swamp; (2) upper Tina River forests; (3) Malukuna, an abandoned village site (700m asl), a ridge before Mt Popomaneseu (2,350 m asl); and (4) Tasulimasanga River Valley (1,100 m asl). Guadalcanal's extremely diverse ecosystems are a result of the rugged topography. Gaining access to these remote forests was a challenge, not so much from the terrain, but from landowner consent and finding the right contacts.

(1) Betikama Creek

The Betikama swamplands are located behind the Betikama Adventist Collage on the outskirts of Honiara. Surveys were conducted here in 2008. Prior to this David Boseto, Clare Morrison and I also conducted an opportunistic search in September 2005. I further carried out subsequent random surveys 2006 and 2007. And more intensive survey was done in 2008, along the edges at various points around the creek.

A survey was done also on the northern end of the creek. This required us to wade into the crocodile infested reeds to the banks on the northern section. At the time I was also working on a bird checklist for the creek and surrounding area and mist netting was occurring in the secondary forests on the northern side. Other important findings during the course of the survey were a possible new species of Reed warbler (*Acrocephalus* sp) (per comm. Dr Chris Filardi, American Museum of Natural History, New York) (Appendix 2). I collected two individuals of this species with my assistant and daughter Rosie (Appendix 2), and these were taken to out on a research permit by Dr Chris Filardi and are currently lodged at the American Museum of Natural History in New York. I also spotted two individuals of Spotted Button-quail (Red- backed Button-quail) *Turnix maculosa solomonis*. These were flushed on a drizzling night on the eastern grasslands between the swampland and Betikama River further east.

The central creek or swampland is infested with saltwater crocodiles (*Crocodylus porosus*). On a night it is not unusual to spotlight between 7 to 10 individuals in an area about 50m x

50m or less, hence caution is required while probing along the waters edge and into the murky waters of the edge.

(2) Mt Popomaneseu

Mt Popomaneseu (2,350m) is Solomon's highest point. The summit is a plateau that extends for at least 1 km above the slopes. Stunted trees, grassland, and bogs dot this landscape. Battered by strong winds, this spine is the highest point on the range that runs east to west in central Guadalcanal.

A checklist of plants of this mountain was done by an expedition back in the 1960s.

Preliminary findings

Visual encounter surveys where done during the course of the survey here. The findings in these reports are only initial and do not necessarily represent the total diversity of the areas surveyed.

Results

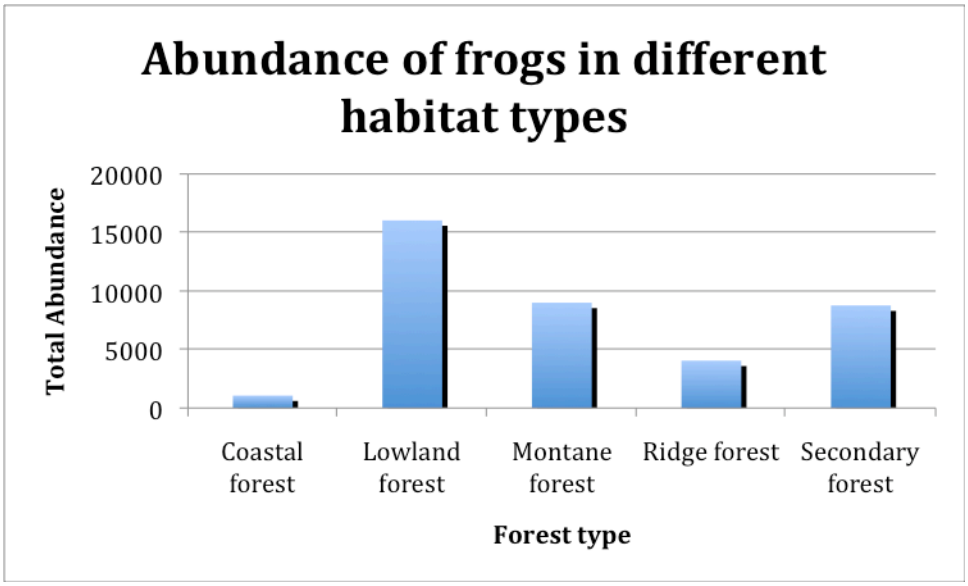
The creek and swamp area is dominated by *Rana krefftii*. Other species found here include *Platymantis solomonis*, *Platymantis weberi* and an unknown *Platymantis* sp. The latter was spotted on the southern edge of the creek between the slope and the creek bank. The individual was yellow, and the size of *P. solomonis*. However, a specimen could not be collected at the time of sighting.

Platymantis and *Ceratobatrachus guentheri* horn frogs dominate the lowland forests. Small *Batrachylodes* frogs were more abundant in overgrown secondary forests, all the way to the high summits of the mountain. A *Litoria thesaurensis* frog was collected at tributary of the upper Tina River.

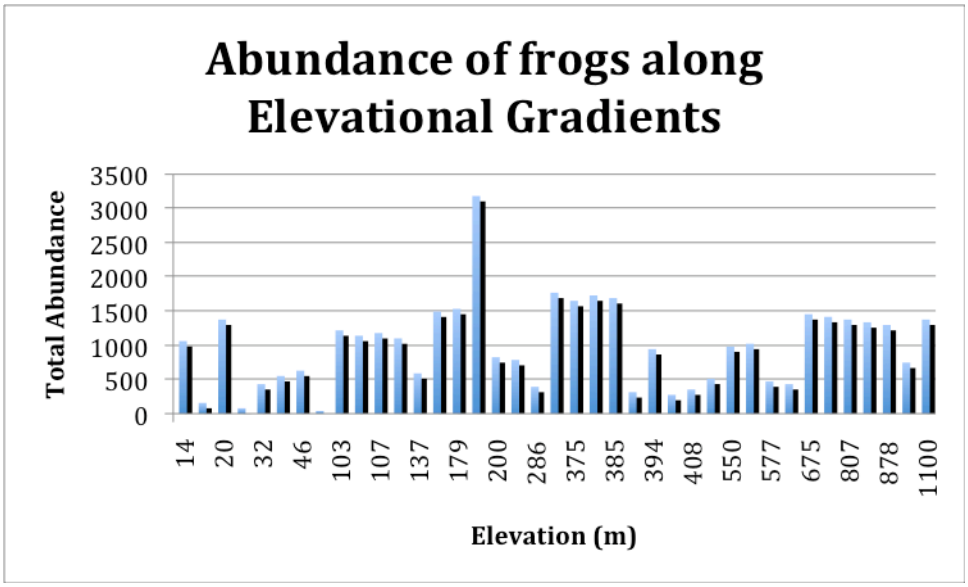
Discodeles malukuna water frogs were abundant at 700m and steep streams often falling of sheer cliffs into a lower streambed. Surprisingly I did not see the giant *D. guppyi* water frog in mid montane elevations and assume that at high elevations this giant frog is replaced by *D. malukuna*.

Relative Abundance indices

Together with other data from previous surveys in the New Georgian islands, we entered data counts into the program *Estimates* which then provided a total abundance count. Indices showed that total abundance was highest in lowland forests followed by montane, secondary, ridge (primary forests), and coastal forests. Frogs of coastal forests were the hardy *Platymantis solomonis, P weberi*, and *Ceratobatrachus guentheri*. These were sturdier and more prone to high salinity along the coast.



Graph 1: showing abundance of frogs in different habitat types



Graph 2: showing abundance of frogs along elevation gradients

Total abundance counts were also highest between 100 – 385 m elevation. These lowland rainforests however were vulnerable to logging concessions.

Sweep through the east New Georgian Islands

During the course of this survey, we also surveyed and resurveyed forest sites on Gatokae, Kolombangara, and Vangunu Island, comparing the diversity of frogs in disturbed and primary lowland rainforests. My focus this time was on gathering basic ecological information like density indices, abundance, activity patterns, behaviour, and acoustic recordings. Understanding acoustic variation among like *Platymantis* species with complementary molecular data would help establish the drivers of speciation amongst frog species on these oceanic islands. Also collecting signature calls of each species would help in monitoring programmes in coming years.

There is some overlapping of frog diversity along elevational gradients, especially obvious on Mt Mariu (885 m asl), Gatokae; Mt Rano (1,685 m asl), Kolombangara and Rendova Peak (1,023 m asl), Rendova island panning from lowland valley forests, to ridge forests, to montane forests.

Recommendation
Sites that should be surveyed are;

- Mt Popomaneseu (2350m asl);
- Isabel.

Future Work
Future surveys
No surveys have been done on Bougainville and Buka, Autonomous Region of Bougainville, Papua New Guinea, since the civil war ceased in 1997. With law and order restored on Bougainville, attempts should be made to survey selected sites here. We propose two surveys in June 2010, on north Bougainville and the December 2010 in central mountains. Access to Bougainville can either be through the Solomon Islands, or through Papua New Guinea.

Publication updates
Printing update of *Frogs of the Solomon Islands*, by P. Pikacha, C. Morrison, and S. Richards to include new species described by SR and Rafe Brown (Kansas University Museum).
Wild West: Rainforests of Western Solomon Islands, published by Melanesian Geo in 2008.

Recommendation

- Surveys to Malaita, especially south Malaita and central Kwara'ae areas.
- Surveys to montane forests of Isabel.

Appendix 1

Frogs checklist

Common name	Scientific name	Location
	Platymantis solomonis	BC, MA
	Platymantis weberi	BC, MA, MPS, MV
	Platymantis sp	BC
	Platymantis guppyi	MA, MPS, MV
	Ceratobatrachus guentheri	MA, MPS, MV
	Rana krefftii	BC
	Batrachylodes elegans	MA, MPS, MV
	Batrachylodes wolfi *Discodeles malukuna*	MPS
	Discodeles guppyi	MA
	Litoria thesaurensis	BC, MA, MPS, MV

Betikama Creek = BC, Mt Austen = MA, Malukuna Village = MV, Mt Popomaneseu slopes = MPS

Appendix 2

Checklist of rare birds
Reed warbler (*Acrocephalus* sp)
Spotted button-quail (red- backed button-quail) *Turnix maculosa salomonis*