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A REPORT ON THE BIODIVERSITY OF THREE PROPOSED PROTECTED AREAS ON SOUTHWEST CHOISEUL ISLAND, SOLOMON ISLANDS

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Acknowledgments

We thank WWF for financing these field trips, and the landowners of Sirebe, Vuri and Kubongava forests for their eagerness to conserve and manage their forests sustainably, and the many forest guides and porters who accompanied us on these field trips.

Acronyms

FPA - Forest Protected Area

HF - Hill Forest

KRBCA - Kubongava Rainforest Biodiversity and Conservation Area

RBCA - Rainforest Biodiversity and Conservation Area

SRBCA - Sirebe Rainforest and Biodiversity Conservation Area

TLR - Tropical Lowland Rainforest

VRBCA - Vuri Rainforest Biodiversity and Conservation Area

WWF - World Wildlife Fund for Nature

WORLD WILDLIFE FUND FOR NATURE - WESTERN MELANESIAN PROGRAM

WWF has been working on conservation issues in Papua New Guinea (PNG) and its surrounding islands for many years. In 2008 WWF's Pacific Office based in Fiji was divided in order to provide more effective coverage in this vast yet biologically important region. The newly formed "Western Melanesia Programme Office" based in PNG also encompasses the Solomon Islands.

WORLD WILDLIFE FUND FOR NATURE – SOLOMON ISLANDS

WWF has been working on conservation issues in Solomon Islands for many years. WWF Solomon Islands has a Sustainable Forestry Project that is funded by the European Union Sutainable Forestry and Conservation Project in Solomon Islands. Their effort in this project is to focus on conservation and sustainable forestry issues in the Solomon Islands.

MELANESIAN GEO – SOLOMON ISLANDS

Melanesian Geo is a new grassroots organization focused at educating local communities in Melanesia on the value of biodiversty conservation. MG is based in the Solomon Islands, and in Fiji. This initiative combines a mixture of on the ground scientific research, backpack journalism, creative writing, and local story – telling in Melanesia.

Report

The Solomon Islands is a faunal rich country. Of the islands in the Solomons archipelago, Choiseul holds the most diversity of birds, frogs, mammals, and reptiles owning to its geographic position, being closest to New Guinea – the centre of biodiversity dispersal in the South Pacific. In this study we surveyed three proposed conservation areas, Sirebe, Vuri and Kubongava on southwest Choiseul. These forested sites showed remarkable levels of biodiversity, yet are today vulnerable because of industrial logging pressures, the expansion of human settlements, forest clearing to make way for gardens, and continuous large tree felling for housing and to sell as sawn timber. Once the forest is open and a path cut in, the admission of invasive species such as cats, dogs and exotic rats follows. We compared the level of biodiversity (of mostly birds, mammals, and frogs) at each site, contrasting this to the level of complexity, intactness, and habitat variableness of each site. Our findings revealed that even in areas previously disturbed like secondary forests, abandoned and overgrown village sites or areas with invasive species, there was still high diversity of vertebrates. Primary forests showed highest diversity of vertebrate species. Frog diversity was highest in primary forests, and more abundant near clear streams. Tree frogs were found common along ridge lines, where topography was uneven, and where the understorey was dominated by palms and tall trees with high percentage canopy cover. Some birds showed preference to undisturbed forests – the larger proportion, whilst others were forest generalists. Small insectivorous bats and fruit bats were mostly confined to the forest, while large *Pteropus* fruit bats were generalists, flying long distances to forage. Native giant rats were extremely rare and we were fortunate to see a Bougainville giant rat (*Solomys salebrosus*) in an overhanging tree over a stream. These rats prefer areas where tall stands of pandanas plants and figs were abundant. Further long term field efforts utilizing several survey methods will improve sampling representation and increase our knowledge of each species distribution, diversity, abundance, and conservation status, and the human impact on these forests and wildlife.

INTRODUCTION

Choiseul Island – Choiseul Island is the northwestern most island in the political Solomon Islands. It is bordered by Bougainville to the northwest and Isabel to the southeast. Vella Lavella is located across the strait to the southwest and Kolombangara across to the south. Southwest Choiseul, the area here studied, is composed of lowland rainforests. The coastline is rugged and in some areas fringed by high limestone cliffs. There are three main large rivers that drain into south Choiseul. These are Mango and Vurulata Rivers to the southeast, and

Kolombangara in the southwest. Largest of these three rivers is the Kolombangara River located west of Sasamunqa Village and east of Zarepe Village on the coast. There is one permanent village in the upper reaches of the Kolombangara River, Vuja Village. The Lauru Rural Training Centre (LRTC) a vocational school operated by the United Church on Choiseul is also located upstream.

MATERIALS AND METHODS

Various methodologies were used to identify different vertebrates during the course of the survey. Birds and bats were mist-netted using fine nylon mist-nets. Ten nets were used during the course of the survey between 2 – 10 March 2009. At each site these were placed at different locations in the rainforest. Nearly all nets were placed along ridgelines to maximize the chances of intercepting a bird or bat crossing the ridge. Some nets were placed in valleys, yet it was apparent that not all the niches in these three forest sites were inspected in this rapid assessment.

We also spotlighted at night for small mammals. There are at least 3 native rats and 1 *phalanger* on Choiseul. A powerful spotlight was used to scan the forest canopy for small mammals.

Birds and mammals

Nets were opened as early as possible, at 6am, and closed at 10pm. These were checked regularly at an hour to two-hourly intervals throughout the day. At night the nets were closed. All birds and bats caught in mist-nets were photographed and released. Some small bats were collected and kept as specimens. These were stored in 70% ethanol and kept at the WWF field office at Sasamunqa.

At night we spotlighted around the forest for giant rats. The *Solomys salebrosus* giant rats were all recorded by spotlighing.

Amphibians and reptiles

Visual encounter surveys were used to survey for frogs. This occurred in the late evening often after the last mist-net was closed. Acoustic vocalization or auditory surveys were used to identify some species that could not be caught. However, many individuals were captured and identified, photographed and then released. Some individuals, especially the *Platymantis* species were collected for DNA samples by the liver collected and placed in viols and topped up with 95% ethanol. The specimens were processed and stored in 70% ethanol. Other common frog species like *Platymantis solomonis*, *P. weberi*, *P. neckeri*, and *Ceratobatrachus guentheri* were collected, euthanatized in chloroform, placed upright for mounting and fixed in formalin, and then washed and stored in 70% ethanol in the WWF field office in Sasamunqa.

Reptile surveys were opportunistic encounters. The reptile surveys took place mainly along the trail where the mist-nets were placed. By walking along the trail we recorded the reptiles encountered. There were a few Emoia skinks and a large *Cyrtodactylus salomonensis* gecko spotted at Sirebe. To determine precise species richness of herpetofauna would require more time in the field and the employment of a combination of sampling techniques such as the use of sticky boards, drift fence arrays, and pitfall traps, etc. By using only two or three sampling methods we are underestimating the species richness.

Habitat and botanical descriptions

Habitat descriptions were done by walking through the forest and identifying key plant species within each site which provided a good representation of the forest type. The land formation was also described.

STUDY SITES

This study was conducted at three rainforest sites around the greater Kolombangara River catchments. The sites are Sirebe, Vuri, and Kubongava. All three sites are proposed forest reserves, and are all lowland rainforest. Only one site, Kubongava, located inland from Zarepe Village, is bordered by the ocean to the south. The other two sites are complete forest reserves, bordered by other tribal lands on all sides.

Rivers or streams often demarcate the customary land boundaries. Unlike many countries, the rainforests of Choiseul and for that matter the Solomon Islands, have long histories of human occupation and land use associated with the landscape. For that matter not all the sites are pristine and undisturbed. There is a long history of harvesting of forest products and materials by local landowners. The ridge above Kubongava land was also the location of an old village site. Today the wooded area is overgrown, and tall secondary forests line the ridgeline.

DESCRIPTION OF FOREST TYPES AND HABITAT VARIABLES

Primary and tall secondary forests

Primary forests refer to forest that have no noticeable impact by humans in terms of clearing and felling or gardening. Primary forests however, may be impacted by hunting and the unintentional introduction of invasive species such as rats, cats and dogs. These forests show tremendous diversity in flora, from many species of ground orchids, shrubs, vines, creepers, lianas, palms, and tall trees.

Tall or overgrown secondary forests refer to forests that have had some level of disturbance by humans, like old village sites, or garden, but where these disturbed forests have now been overrun by the re-generating forest. In some cases the crowns of secondary emergent trees within these areas, have caught up to the canopy in adjacent primary forests. An example of this kind of woodland is the ridge forest at Kubongava where it is composed of tall overgrown secondary forest.

Open areas and forest edges

Open areas refers to garden clearings, old abandoned villages, some new and freshly cut secondary forests, clearings in the forest where trees have been recently felled, village areas and outliers and forest edges. These are generally the modified human landscape.

Streams and river channels

The forest along riverbanks on the upper Kolombangara River is mostly lined with tall *Pometia pinnata* and *Calophyllum* sp, trees. There are other large forest trees that grow along this water boundary, and thick budding undergrowth arise in areas that have been previously cut or cleared to make way for gardens next to the rivers edge. There are many small tributaries that drain into the main Kolombangara River. These stream channels are especially critical to vertebrate diversity forming important habitats and foraging areas for some species like cryptic giant rats, and some species of frogs. These streams act as pathways for birds and bats that traverse along these corridors in the forest. A summary of the habitat variable that was noted in this study is recorded in table 1.

Table 1: Habitat variables recorded in the three areas, Sirebe, Vuri and Kubongava

Habitat Variable
Stream presence
Stream size
Presence of palms
Presence of timber trees, pometia, etc
Forest within 50m of stream
General forest type
Understorey vegetation
Evidence of tree felling
Evidence of logging
Evidence of old village site
Evidence of old garden
Evidence of invasive animals such as rats, cats and dogs

A summary of the various habitat variables recorded in table 1, noticeably influenced certain species composition and abundance in the study sites. For example certain frogs where found to be more common along stream edges, and tended to prefer the presence of clear water, whilst others were more common in primary undisturbed forests, with high canopy structures, and where there was no logging or tree felling. Some birds where forest generalists, others were not found

where there were presence of invasive animals like cats and dogs. Some small mammals, like the *Solomys* rats preferred areas of thick vegetation where there was no logging or disturbance, presence of understorey tree cover and a forest with lots of lianas, creepers and epiphytes. In brief, habitat variables did influence species composition and some species showed preference to different habitats or niches.

SPECIFIC STUDY SITES

Sirebe Rainforest and Biodiversity Conservation Area (SRBCA)

Traditional Owners: Sirebe Tribal Community
Land area (gross): c. 784 Ha
Conservation Area: c. 750 Ha

* (Sometimes the name Pisuku is used interchangeably with Sirebe to refer to the same area. Pisuku refers to a stream and a bivalve shell believed to be only found in a stream within Sirebe land)

Sirebe Rainforest and Biodiversity Conservation Area (SRBCA) is roughly 750ha and located in the upper reaches of the Kolombangara River on southwest Choiseul. It is accessed by traveling upstream by boat or by a few hours hike inland from Sasamunqa Village. The area is composed of lowland rainforest and ridge forests. Palms and ferns dominate the valleys transected by streams, whilst large trees including strangler figs are abundant on the slopes and the ridgeline.

There is an old abandoned village at the entrance to Sirebe land, which is now being re-inhabited. A research station/village is being built here. The flat lands around the station are mostly gardens, former abandoned gardens, and beetle nut tree groves. Trees, mostly *Pometia pinnata*, are also being felled on the upper reaches of the eastern bank of the Kolombangara River.

Botanical description

Two main types of natural forest appear to dominate Sirebe land. These are tropical lowland rainforest (TLR) and hill forest (HF) on the ridge tops. A third forest type is orded by mixed composition of old growth and secondary growth vegetation. This secondary vegetation occurs in old garden sites and old human settlement. Apart from the distinctive secondary forests in human disturbed areas, both forest types (TLR and HF), surrounding the gentle and steep ridges overlap so often that their variations species compositions, canopy structure, and even their general appearances cannot be easily distinguished.

The rainforest here is very rich in commercial timber trees, small to medium sized trees, shrubs, herbs, creepers and climbers. Native and endemic orchids that are either epiphytic or terrestrial in nature are distributed randomly in tree tops and on the forest floor. An endemic herb, only known to exist in some islands in the Solomons, *Spathiphyllum solomonensis*, is also found to be quite common here. This particular herb is both terrestrial and epiphytic in the nature and is a close relative of the more common and widespread genus *Scindapsus* that includes several species. Both are in the same plant family.

The tree flora is dominated by *Pometia pinnata*, *Vitex cofassus*, *Calophyllum peekellii*, *Flueggia flexuosa*, *Canarium salomonense* and *Syzygium* spp. However, the following timber trees are found to occur:*Alstonia scholaris, Amoora cucullata, Burckella obovata, Calophyllum peekellii, Campnosperma brevipetiolata, Canarium salomonense, Flueggia flexuosa, Elaeocarpus sphaericus, Dysoxyllum excel sum, Pometia pinnata, Vitex cofassus, Syzygium tierneyna, Syzygium spp., Terminalia calamansanai*, and several other minor timber trees. Thus, this rainforest is very rich in timber stocks per unit area and is typical of forest areas coveted by all logging companies, which is a great threat to biodiversity conservation endeavours.

Another striking feature of the Sirebe rainforest flora is the typical balance in the abundance and distribution of native palm species throughout the reserve area. Only certain islands in the Solomons Archipelago would boast of such a good mixture of different plant species in one particular plant group or family covering an extensive area.

The following palms are found in the area, some domesticated and others wild; *Areca catechu* (planted), *Areca macro calyx* (wild), *Calamus hollrungii*, *Calamus stipitatus, Caryota rumphiana, Drymophloeus solomonensis, Gulubia macrospadix, Heterospathe minor, Heterospathe salomonense, Licuala lauterbachii, Ptychosperma latius, Ptychosperma salomonense, Rhopaloblaste elegans*.

Vuri Rainforest and Biodiversity Conservation Area (VRBCA)

Traditional Owners: Vuri sub-Tribe of Sikipozo main tribe
Land Area (Gross): 926 Ha
Conservation Area: 900 Ha
Location: 07°01.166'; E156°47.162'

Vuri rainforest reserve (07°01.166'; E156°47.162') is about 900ha and located in the foothills behind Sasamunqa village. The track to the area begins at Sasamunqa village, following Vavudu stream for at least 2 kilometers. Gardens line both sides of the river, until reaching a major folk in the river with one tributary winding northeast and the other northwest. This river junction is the entrance to the proposed protected area. Beyond this point are a few gardens, and further than this are tall secondary forests. The river valley becomes steeper on the edges, the immediate river boundaries lined and dominated by palm trees. Further along, the primary rainforests extend above the ridgeline and down into a steep ravine into the Vuri river drainage, a network of streams that all empty into the Kolombangara River. Vuri customary land borders the Kolombangara River to the north and another tribal land to the east and west. The total protected area size is about 900ha composed of high stands of trees, palms in the valleys, and some old secondary forests on the ridge coming into the proposed protected area.

Botanical description

The flora of Vuri is mainly comprised of Lowland undisturbed Primary forest. The area is quite extensive and is bordered by the upper parts of Kolombangara river, thus, it is found within the catchment of the Kolombangara river Basin. The forest type is more or less very similar in characteristics and composition to that of Sirebe Rainforest areas. The description can be said to be the same, despite of slight variations per specific locality, that is, in any given specific area of forests some natural differences are unavoidably occurring, due to the natural features of the place. Most common timber trees are found to be abundant. Large trees including; *Pometia pinnata, Vitex cofassus, Campnosperma brevipetiolata, Pterocarpus indicus, Elaeocarpus sphericus, Dillenia salomonense, Aglaia ganggo, Calophyllum peekellii, Terminalia calamansanai, Dysoxylum excel sum, Canarium salomonense, Terminalia brassii, Planchonella firma* and *Pangium edule*.

A notable striking feature is the palm dominated valleys and lowland ridges. Palms found here are; *Areca catechu, Areca macrocalyx, Calamus hollrungii, Calamus stipitatus, Caryota rumphiana, Drymophloeus salomonense, Gulubia macrospadix, Heterospathe minor, Heterospathe solomonensis, Licuala lauterbachii, Ptychosperma salomonense, Rhopaloblaste elegans*.

Kubongava Rainforest and Biodiversity Conservation Area (KRBCA)

Traditional owners: Kubongava Tribal Community
Land Area (Gross): 468 Ha
Conservation Area: 430 Ha
Location: 07°57.440'; E156°42.762'

Kubongava Rainforest and Biodiversity Conservation Area (KRBCA) is the smallest proposed rainforest reserve of the three sites surveyed. The area is located behind Zarepe Village, west of Sasamunqa and covers a total area of about 250ha. The highest point is a small main ridge reaching an elevation of about 300m. Deep valleys with radial streams issue forth from the ridgeline. Steep gorges and valleys dissect the lowlands to the south of the ridgeline with small streams. Some streams were dry when we visited, but torrential am sure during seasons of heavy rainfall. All these streams meet further along to

drain into a permanent swampland forested by *Terminalia* trees, tall mangrove trees and swamp taro in the understorey and in open areas. Palms dominate the forest within this rainforest reserve.

Botanical description

The Kubongava RBCA is comprised of an extensive area of freshwater swamp forest, lowland forest, hill forest and extensive patches of old and recent secondary forest. The freshwater swamp forest comprised of the following dominant trees; *Terminalia copelandii, Terminalia brassii, Campnosperma brevipetiolata, Planchonella sp., Inocarpus fagifer, Neonauclea orientalis, Pterocarpus indicus, Syzygium spp.* and *Pometia pinnata*.

The lowland forest of Kubongava is extremely rich in merchantable timber trees. Typical species such as *Vitex cofassus, Pometia pinnata, Alstonia scholaris, Pterocarpus indicus, Dysoxylum excel sum, Syzygium onesima, Syzygium tierneyana, Terminalia brassii, Alstonia spectabilis, Canarium indicum, Canarium salomonense, Calophyllum peekellii, Calophyllum solomonensis, Syzygium sp., Planchonella thyrsoidea, Planchonella firma*, and *Octomeles sumatrana, Flueggia flexuosa, Endospermum medullosum, Elaeocarpus floridanus, Dillenia solemnise, Terminalia calamansanai, Octomeles sumatrana, Intsia bijuga* and *Alstonia scholaris*.

Hill forest is an overlap of most lowland forest except that they occur in higher altitudinal zonation on hill tops. There appears to be clear boundaries based on altitudes that separate and distinguish these two forest types from each other, although the vegetative appearance is similar. Species composition is the determinative factor in this regard. Thus, the slight variations and differences in species in the different localities is noted and given considerations as such.

Many other plant groups such as *Pandanus* spp, *Freycinetia* spp, orchids, herbaceous, shrubbery, mosses, lichens and liverworts are common on the hill forests of Kubongava.

The following Palms are recorded in this particular forest protected area; *Areca catechu, Areca macrocalyx, Areca sp, Calamus hollrungii, Calamus stipitatus, Caryota rumphiana, Gulubia macrospadix, Heterospathe minor, Heterospathe solomonensis, Licuala lauterbachii, Ptychosperma salomonense* and *Rhopaloblaste elegans*.

MAJOR RESULTS

The results of this survey are only summarized in this section. This review is an output of this brief survey effort, hence not every vertebrate species is recorded that is may be found in these areas. Our rapid survey does not do justice to the remarkable diversity found here, and cannot be truly reflective of the biodiversity of these three sites. Having said that, all three areas, Sirebe, Vuri, and Kubongava proved to be areas of high biodiversity, and we encountered some rare and vulnerable and endangered species.

Time effort

Three days and two nights were spent surveying Sirebe land. We took two days each to survey at both Kubongava and Vuri forests. A total of 7 days and 4 nights were spent in the field. In order to ascertain comprehensively the total number of species found in each site, there will need to be more time spent on the survey effort. Nevertheless, it is obvious from this short assessment that there are many species unidentified and many more that may be new to science. A more complete and detail assessment is required to establish the exact number of species of each taxa at all sites. This will require longer, more thorough and extensive surveys in each forest type, and along each geological formation or landforms in each of these protected areas. (We are of the opinion that there is some wildlife found in limestone karsts areas that are uncommon or not found in lowland hilly forests.)

Bird surveys took place in all three sites. At Sirebe we set up 10 mist nets, and at Vuri and Kubongava only 6 nets were set up. A total of 27 birds were identified during the course of the surveys at all three sites. Most birds were found in the Sirebe forest reserve above the Kolombangara River. This was due mainly to the longest survey time spent here. Vuri on the other hand, yielded

very little in terms of birds netted. We only placed the nets out for a few hours, and were hit by torrential rain that same afternoon. Only a single black and white monarch (*Monarcha barbatus*) was caught in the mist net. The rest of the birds at this site were identified by the use of binoculars, and by their song call. These birds included golden whistlers, song parrots, red knobbed pigeons, and hornbills.

Frogs surveys took place after nets were closed at night. On average three to four hours of searches took place each night, occasionally concluding at 1am in the morning. During this time we searched for both nocturnal reptiles and amphibians. Amphibians were easier to locate following the direction of their calls.

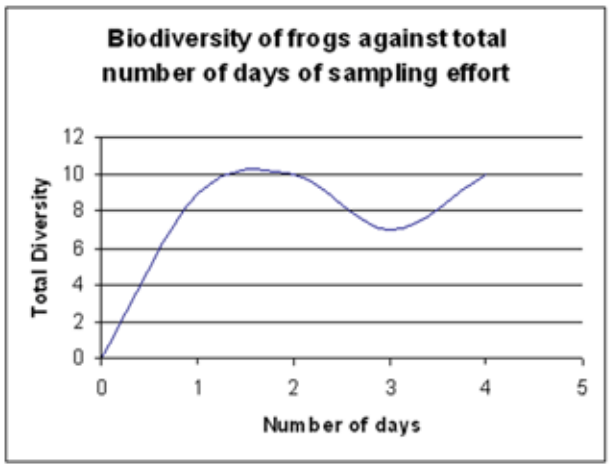
Amphibians

Of the 21 species of frogs in the Solomon Islands, 19 species are found on Choiseul Island (Pikacha et al., 2008). Choiseul by far has the highest diversity of frog species and new species are bound to be discovered in less explored country.
There were a total of 11 species of frogs identified during the course of this survey, including one unidentified *Brachylodes* sp. In total 12 species were located in three sites. This figure accounts for 63% of the total known frog fauna known of Choiseul, and 52% of Solomon Islands.
Some species are further elaborated upon in the subsequent sections.

The forests of Sirebe and Vuri had the most frog species. Ten species were found at Sirebe and 11 at Vuri, including the IUCN listed vulnerable species – *Palmatorappia solomonis*. The most abundant tree frog was *Platymantis neckeri*. This species was found in all three sites. The least common was *Pal. solomonis*.

There was a breeding pool for *Litoria thesaurensis* found at Vuri. This is significant because of the congregation of breeding females and males found here. We did not encounter any species of *L. thesaurensis* at both Sirebe and Kubongava. The pool at Vuri is found in secondary forests, and dominated by *Alpinia pupurata* gingers around the bank.

The majority of frogs of the Solomon Islands are oviparous, the eggs guarded by the female or male frog. Once the eggs hatch little froglets emerge. It is quite easy to locate frog egg masses once recognized. Small sticky- toed frogs of the genus *Brachylodes* lay egg masses in small shrub plants, while the giant tree frog *Platymantis guppyi* lays their eggs in birds nest epiphytes. Local frogs do not depend upon standing pools of water to complete the reproductive cycle except for *Rana krefft*i which lay tadpoles in pools of water.



Over the period of 4 nights we surveyed in three areas, resulting in a total of 11 species of frogs. Only one survey technique was employed during the course of the survey, visual encounter surveys (VES). If a number of survey methods like pitfall traps, etc, were used this would have resulted in more captures and therefore more species. Surprisingly after only 4 nights using VES, the total diversity range of frog species over time began to level off indicating that perhaps we were reaching total species diversity in these areas, unless there were cryptic frogs which we were missing. The latter could be high probable.

Birds

Birds of primary and secondary forests – I noted a few species of birds confined to primary and tall secondary forests, such as Midget flowerpeckers (*Dicaeum aeneum aneum*), Golden whistlers (*Pachycephalus pectoralis*), Song parrots (*Geoffroyus h. heteroclitus*), Crested cuckoo doves

(*Reinwardtoena crassirostris*), black and white monarchs (*Monarcha b. barbatus*) and White – billed crows (*Corvus woodfordi woodfordi*). The latter seemed to be more common in the upper reaches of the Kolombangara River along tributaries as opposed to coastal forests and villages, where they once were common. According to local informants, White – billed crows seem to have relocated further inland away from human disturbance. On Guadalcanal I have only seen these birds on the ridges near the now abandoned Malukuna village at about 1000m and the ridges below Mt Popomaneseu (2,385m).

There were no ground birds sighted during the course of the survey, perhaps because of the presence of feral cats, and introduced rats. The canopy in all three sites was closed, casting shade on the understorey plants and trees. Palm forests surprisingly did not yield as many bird and frogs species as expected. This may however be due to the shortness of the survey period.

Forest generalists – Forest generalists like Blyth's hornbills (*Aceros plicatus mendanae*), Eclectus parrots, fruit doves, lorikeets occupied the zone between secondary and primary forests, often darting in and out of primary forests and tall secondary forests, and even forest edges. The population of these birds is usually abundant. These birds will be found anywhere fruiting ficus, or any fruiting tree for that matter is found.

Birds of open areas – Some species of birds preferred open areas. These included, sunbirds (*Necterinia jugularis flavigaster*), Brown winged starlings (*Aplonis g. grandis*), Metallic starlings (*Aplonis metallica*), Singing starlings (*Aplonis c. cantoroides*), Pacific swallows (*Hirundo tahitica*) and the many swiftlets. These birds are abundant in abandoned gardens, along stream edges, and the Kolombangara River.

Birds of forest edges and stream corridors – These birds included Mackinlays cuckoo dove (*Macropygia mackinlayi arossi*), Yellow faced mynas (*Mino dumontii kreffti*), Willy wag-tails, and kingfishers, etc. These are birds that are often encountered along the river edges. They often use the topography like the river banks to make their nests. Willy wag tails nest frequently on the Kolombangara River, building their nests on overhanging vines over the river, or on dead logs. Common kingfishers nest along the river by digging tunnels in the river bank.

Mammals

Choiseul in general is an island extremely rich in diversity of mammals. It is has the highest number of mammals recorded in the Solomon Islands (Flannery, 1995). And is one of a few islands in the Solomon's that have native giant rats. We spotlighted an individual at Padezaka land and forested area adjacent to Sirebe land, and below Vuri land near Sasamunqa Village. These are amazing giant arboreal rodents, extremely cryptic in nature and spend almost all their lives in the trees. Unfortunately they are today threatened by hunting, the introduction of invasive mammals especially cats, and by habitat destruction.

All three protected areas exhibited high diversity of bats. There were 7 species identified during the course of the survey. A giant horseshoe bat (*Hipposideros dinops*) was collected on a ridge above Zarepe village, which we did not see in the other sites.

Reptiles

The reptile survey accounted for 14 species. The majority of reptiles were common and actually widespread as well, except for *Cyrtodactylus salomonensis* which was only encountered at Sirebe, but am sure with more effort would be seen at Vuri and Kubongava as well. This is a relatively large forest gecko, preferring tall primary forests to open areas, village outliers, or forests edges where they are uncommon.

There were a few skinks seen in all areas. There there is evidence of *Corucia zebrata*, or the prehensile tailed skink. Hunters regularly encounter these giant skinks when out hunting or felling a tree. The individuals of *C. zebrata* on Choiseul are generally larger then their eastern relatives.

The most common skinks in the forest were

the green bellied skink (*Emoia cyanogaster*), brown tailed copper striped skink (*Emoia cyanura*), and Pacific black skink (*Emoia nigra*). The mildly venomous Solomon red krait (*Salomonelaps par*) was seen at Kubongava. This snake is common in primary and overgrown secondary forests. It is mostly absent from gardens areas, open areas or grasslands. It can however, be found in abundoned gardens, or under pilled up composing rubbish in garden areas. I have seen this snake hunting for *Platymantis solomonis* frogs at Kamaga land, an area east of these study sites on Choiseul, and we observed one species swallow a small *Brachylodes elegans* frog at Sirebe land.

Species recorded during the course of the survey. The the redlisting status were confirmed from the redlist data base.

Amphibians

Solomon Islands eyelash frog *Ceratobatrachus guentheri* (LC)
Treasury Island tree frog *Litoria thesaurensis* (LC)
Solomon wrinkled ground frog *Platymantis solomonis* (LC)
Weber's wrinkled ground frog *Platymantis weberi* (LC)
Necker's wrinkled ground frog *Platymantis neckeri* (LC)
Solomon giant tree frog *Platymatis guppyi* (LC)
Giant webbed frog *Discodeles guppyi* (LC)
Malakuna webbed frog *Discodeles malakuna* (DD)
Warty webbed frog *Discodeles bufoniformis* (LC)
Elegant sticky-toed frog *Batrachylodes elegans* (LC)
Fauro sticky-toed frog *Batrachylodes vertebralis* (LC)
Unknown sticky-toed frog *Brachylodes sp.*
Solomon Islands palm frog *Palmatorappia solomonis* (VU)

Birds

Black and white monarch *Monarcha b. barbatus* (NT)
Brahminy kite *Haliastur indus flavirostris* (LC)
Blyths hornbill *Aceros plicatus mendanae* (LC)
Brown-winged stirling *Aplonis g.grandis* (LC)
Crested cuckoo dove *Reinwardtoena crassirostris* (NT)
Cardinal lories *Chalcopsitta c. cardinalis* (LC)
Common kingfisher *Alcedo atthis salomonensis* (LC)
Ducorp's cockatoo *Cacatua d. ducorpsi* (LC)
Eastern reef egret *Egretta s. sacra* (LC)
Electus parrot *Ecclectus roratus solomonensis* (LC)
Golden whistler *Pachycephalus pectoralis* (LC)
Goshawk *Accipiter sp* (LC)
Island imperial pigeon *Ducula p. pistrinaria* (LC)
Mackinlay's cuckoo-dove *Macropygia mackinlayi arossi* (LC)
Melanesian scrubfowl *Megapodius eremita* (LC)
Metallic stirling *Aplonis metallica* (LC)
Midget flowerpecker *Dicaeum aeneum aeneum* (LC)
Pacific black duck *Anas superciliosa* (LC)
Rainbow lorikeets *Trichoglossus haematodus massena* (LC)
Superb fruit-dove *Ptilinopus s. superbus* (LC)
Song parrot *Geoffroyus h. heteroclitus* (LC)
Singing starling *Aplonis c. cantoroides* (LC)
Variable kingfisher *Ceyx lepidus meeki* (LC)
Willie wagtail *Rhipidura leucophrys melaleuca* (LC)
White-billed crow *Corvus woodfordi woodfordi* (LC)
Yellow-faced myna *Mino dumontii kreffti* (LC)
Yellow-bellied sunbird *Nectarinia jugularis flavigaster* (LC)

Mammals

Admiralty flying fox *Pteropus admiralitatum* (LC)
Bougainville giant rat *Solomys salebrosus* (EN)
Pigs *Sos scrofa* (LC)
Giant horseshoe bat *Hipposideros dinops* (DD)
Northern blossum bat *Macroglossus minimus* (LC)

Northern common cuscus *Phalanger orientalis* (LC)
Poncelet's giant rat *Solomys ponceleti* (CR)
Solomons bare-backed fruit bat *Dobsonia inermis* (LC)
Solomons tube-nosed bat *Nyctimene bougainville* (DD)
Solomons flying fox *Pteropus rayneri* (LC)
Woodford's blossum bat *Melonycteris woodfordi* (LC)

Reptiles

Brown tailed copper striped skink *Emoia cyanura* (LC)
Brown tree snake *Boiga irregularis* (LC)
Emerald tree skink *Lamprolepsis smaragdina* (DD)
Green bellied tree skink *Emoia cyanogaster* (LC)
Oceanic gecko *Gehyra oceanica* (LC)
Oceanic gecko *Gehyra oceanica* (LC)
Mangrove monitor *Varanus indicus* (LC)
Pacific black skink *Emoia nigra* (LC)
Pacific Boa *Candoia bibroni* (LC)
Prehensile tailed skink *Corucia zebrata* (DD)
Sago gecko *Gecko vittatus* (DD)
Solomon ring-tailed gecko *Cytodactylus salomonensis* (DD)
Solomon red krait *Salomonelaps par* (LC)
Stumped toed gecko *Gehyra mutilata* (LC)

IUCN Redlist status: LC - Least Concern, VU - vulnerable, EN - Endangered, CR - Critically Endangered, DD - Data Defficient

Table 1. A summary of the total vertebrates recorded during the course of the rapid survey in March, 2009 at Sirebe, Vuri and Kubongava, southwest Choiseul.

	Total	Number of endemic species	Number of native species	Number of introduced species
Birds	31	3	28	0
Mamals	12	4	5	3
Frogs	13	6	7	0
Reptiles	14	2	12	0
TOTAL	70	15	52	3

SPECIES OF CONSERVATION CONCERN

The following species are of conservation concern due to low numbers, or declining populations.

Birds

Black and white monarch *Monarcha b. barbatus* (NT)
Crested cuckoo dove *Reinwardtoena crassirostris* (NT)

Mammals

Bougainville giant rat *Solomys salebrosus* (EN)
Poncelet's giant rat *Solomys ponceleti* (CR)

Reptiles

Prehensile tailed skink *Corucia zebrata* (DD)

We have listed the the Prehensile tailed skink (*Corucia zebrata*) in this category although it is data deficient, due to the fact that it is hunted and killed quite frequently by locals if encountered, and because it's habitat is being destroyed mainly by large scale logging and by villagers clearing forests for gardens.

The native giant rats *Solomys ponceleti* and *S. salebrosus* are today extremely rare. They mainly nest in trees of large girth, and feed on fruits and figs. Today the trees which they depend on are being felled, and the forest complexity - the vines, figs, fruits, edible leaves, and nuts they depend on, are being depleted as the forest is thinned

or destroyed. As a resut their populations are in decline. It is unclear what their numbers are today. *Solomys ponceleti* is the rarer of the two giant rat species. We have not seen this species, and they were not encountered in this survey. However, the local hunters say that they infrequently spot these giant arboreal rodents whilst out hunting, and have killed to eat some individuals when trees have been felled. According to local hunters the population of *S. ponceleti* is in decline.

Invasive species may turn out to be a real problem in these forests. Populations of cats are quite high in some areas, like Sirebe. And this may also result in young giant rats being taken and killed. There are also feral dogs in the forests, and introduced rats. All compete for limited resources and space.

DISCUSSION

There were a total of 70 vertebrates identified during the course of the survey. This included 12 mammals, 31 birds, 13 frogs, 14 reptiles. Despite being a short and rapid survey, this study showed high levels of diversity of vertebrates in all three proposed protected areas. There were presence of endemic species like *Solomys* rats, palm frogs (*Palmatorrapia solomonis*), and birds like White winged fantails (*Rhipidura cockerelli*), variable kingfishers (*Ceyx lepidus meeki*), and dusky myzomela's (*Myzomela larfargei*).

The assortment of plants and the landscape that support this remarkable vertebrate diversity is itself extremely varied. These wide-ranging landscapes are composed of ridge forests is dominated by tall rainforest trees the canopy exceeding more than 30 meters, to gullies and steep drainages carved by torrential water flows originating from the high ridgelines typical of the lowland rainforests of Kubongava. The understorey here dominated by palm forests. In this study we did not survey in all the different topographic types and levels. It has been noted though that different elevations on limestone soils or topographical features in the landscape produce diverse phytogeographical affinities in plants (Brewer, et. al, 2003). This may also be the case for vertebrate diversity where limestone karsts may afford unusual shelters like caves, caverns, and fissures in rocks for vertebrates isolated over long periods of time that may otherwise have be exposed to predators in lowland rainforests. A more comprehensive survey in limestone territories would probably yield some interesting vertebrate discoveries.

Our preliminary survey failed to account for the reptile fauna. Reptiles recorded in this survey were entirely opportunistic. This was a gap in this assessment, and here data is insufficient and cannot be trusted.

CONCLUSION

Sirebe, Vuri, and Kubongava areas are extremely varied in terms of topography and forest types. These areas support a rich and diverse vertebrate diversity, some species of which are endangered and rare. Certain endangered species would merit special conservation effort. And there is opportunity to have a seperate program to work exclusively with these rare animals.

Monitoring and management of invasive animals also needs urgent addressing. Cats may be competing with ground birds and native rats. Also the invasive rats may be competing with local melomys and Solomys rats for space and food. An effort to understand what the direct impact of invasive animals are having on native wildlife is important.

Given that landowners are keen to protect these last stands of rainforest, this preliminary survey is a first step towards conserving these tropical lowland rainforests. There is opportunity for greater community awareness with local communities. We did one public presentation at Sasamunqa village which was appreciated.

KEY CONSERVATION RECOMMENDATION

- There should be an extended survey in all three areas that includes not only a list of species, but typical habitat type

requirements, food sources, and ecosystem functions and interactions. This would provide important facts to substantiate the ecological and biological significance for protecting and conserving these particular sites, create fixed term plots and establish long-term biological monitoring.

- Boundary surveys of these three areas using mobile GPS mappers should occur. This would determine a clear demarcation of each site and accurately calculate the total forested land under protection.
- Urgent research to determine the status of endangered and crytically endangered species should take place. A conservation program to work with these animals to ensure their protection and populations do not decline.
- The findings this survey, should be further made available to the general public through the printing of posters, or brochures to generate interest and commitment to current conservation work on southwest Choiseul. This information (posters and brochures) can be placed at the Distance Learning Center (DLC) at Sasamunqa, the Taro airport at Choiseul Bay, and even at the Gizo airport. The DLC is a frequently visited venue by high school students and villagers not only from Sasamunqa, but from other villages around southwest Choiseul, for this reason, placing these posters at strategic locations will generate better public awareness of the environment.
- The vertebrate and for that matter diversity of tropical trees on limestone topography on Choiseul are not known. There have not been any biological surveys done in these areas. It is necessary and urgent given the large scale clearing of forests on Choiseul through logging that such searches be done to establish a complete faunal account of each landform or type on the island. It may be that with elevation on limestone landscapes and topographic features, faunal and vegetation compositions and affinities may be quite distinct and different from that of typical lowland rainforests with usual soil characteristics. The information from these surveys can be overlaid on GIS programs to target priority conservation areas.
- The upper Kolombangara River catchment has not been explored. Collectively all these tribal areas in southwest Choiseul could be combined to form a southwest Choiseul rainforest protected area. Village engagements to establish contact with landowners and surveys within these sites could lead to broader collaboration with other resource owners and interested NGO's like Conservation International, American Museum of Natural History and The Nature Conservancy.

KEY RECOMMENDATIONS

Community

- Workshops with landowners to map land use for each of the three customary areas. And to agree on which areas are to be preserved and protected and which are to be exploited sustainably. The protected area should account for a major portion of the total customary land in each site. Management areas or areas to be sustainably exploited should not at any time encroach or threaten the protected area. Instead, there should be replanting of native species in these managed areas so that the area or perimeter continues to act as a buffer precinct for the protected area.
- A workshop should confirm genealogical mapping to determine current land users and present land use practice. During this gathering landowners need to be educated on the "do's" and "don'ts" so that there is no willful encroachment by them into the selected protected areas. There should be agreed upon rules and regulations drawn up by the community that are accepted and respected by all persons
- Most importantly a sustainable economic alternative other than the felling of

trees to further degrade as sawn timber should be considered. This may include research tourism and the building of a research station at each site, or a combined conservation agreement, which may include other landowners to attract a larger financial endowment to sustain a realistic and sustainable forest conservation program. This will require widespread biological surveys to establish the exceptional biodiversity values of the forests here, and corresponding workshops with all landowners with the aim of drafting and agreeing on an inclusive management document that all landowners can agree on.

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Appendix 1

Table 1: A summary of birds found in three study sites, Sirebe, Vuri, and Kubongava

Common names	Scientific names	Sirebe	Vuri	Kubongava
Black and White Monarch	*Monarcha barbatus*	X, n, em, nt	X, n, em, nt	
Brahminy Kite	*Haliastur indus flavirostris*		X, n,	
Blyth's Hornbill	*Aceros plicatus mendanae*	X, n, c	X, n, c	X, n, c
Brown winged Starling	*Aplonis g. grandis*	X, n		
Crested Cuckoo - dove	*Reinwardtoena crassirostris*	X, n		
Cardinal Lories	*Chalcopsitta c. cardinalis*	X, n		
Common Kingfisher	*Alcedo atthis salomonensis*	X, n		
Ducorp's Cockatoo	*Cacatua d. ducorpsi*	X, n, c	X, n, c	X, n, c
Dusky Myzomela	*Myzomela larfargei*	X, n, ci		
Eastern Reef Egret	*Egretta s. sacra*	X		
Eclectus Parrot	*Eclectus roratus solomonensis*	X, n, c	X, n, c	X, n, c
Golden Whistler	*Pachycephalus pectoralis*	X, n, c	X, n	
Goshawk	*Accipiter sp.*		X, n	
Island Imperial Pigeon	*Ducula p. pistrinaria*	X, n		
Mackinlay's Cuckoo - dove	*Macropygia mackinlayi arossi*	X, n		
Melanesian Scrubfowl	*Megapodius eremita*	X, n	X, n	
Metallic Starling	*Aplonis metallica*	X, n		
Midget Flowerpecker	*Dicaeum aeneum*	X, n		X, n
Pacific Black Duck	*Anas superciliosa*	X, n		
Red - knobbed Imperial Pigeon	*Ducula r. rubricera*	X, n		
Pacific Swallow	*Hirundo tahitica*			X
Superb Fruit-dove	*Ptilinopus superbus*	X, n		

Rainbow Lorikeets	*Trichoglossus haematodus massena*	X, n, c	X, n, c	X, n, c
Song Parrot	*Geoffroyus h. heteroclitus*	X, n		
Singing Starling	*Aplonis c. cantoroides*	X, n		
Variable Kingfisher	*Ceyx lepidus meeki*	X, n, ci		
Willie Wagtail	*Rhipidura leucophrys melaleuca*	X, n		
White-billed Crow	*Corvus woodfordi woodfordi*	X, n	X, n	X, n
White Winged Fantail	*Rhipidura cockerelli*	X, n, ci		
Yellow-faced Myna	*Mino dumontii kreffti*	X, n		
Yellow-bellied Sunbird	*Necterinia jugularis flavigaster*			

X = present i = information from informants and hunters pr = prehistoric introduction n = native
r = rare c = common en = endangered nt = near threatened vu = vulnerable em = endemic to Solomon Islands

Appendix 2

Table 2: A summary of amphibians in three study sites, Sirebe, Vuri and Kubongava.

Common names	Scientific names	Sirebe	Vuri	Kubongava
Feral cats	*Ceratobatrachus guentheri*	X, #		X, #
Northern Common Cuscus	*Phalanger orientalis*	X, c, pr	X, c, pr	X, c, pr
Feral Pigs	*Sos scrofa*	X, c, pr	X, c, pr	X, c, pr
Bougainville Giant Rat	*Solomys salebrosus*	X, n, i, ##	X, n, i, ##, *	
Poncelet's Giant Rat	*Solomys ponceleti*	##	X, n, c	X, n, c
Solomon's Bare - backed fruitbat	*Dobsonia inermis*	X, n, c	X, n, c	X, n, c
Woodford's Blossum Bat	*Melonycteris woodfordi*	X, n	X, n	
Northern Blossum Bat	*Macroglossus minimus*	X, n, c	X, n, c	X, n, c
Solomons Tube-nosed Bat	*Nyctimene bougainville*	X, n	X, n	X, n
Solomons Flying Fox	*Pteropus rayneri*	X, n, c	X, n, c	X, n, c
Admiralty Flying Fox	*Pteropus admiralitatum*	X, n, c	X, n, c	X, n, c
Giant Horseshoe Bat	*Hipposideros dinops*		X, n	

X = present i = information from informants and hunters pr = prehistoric introduction n = native
r = rare c = common en = endangered vu = vulnerable em = endemic to Solomon Islands

According to local informants, and hunters, there is a reasonably high population of feral cats in Sirebe land. Assuming this is the case it is safe to infer that it is likely Vuri land has populations of feral cats as well since it is closest to Sasamunqa village. At Sirebe land, it is probable that due to the presence of cats there were no ground dwelling birds captured during the course of the survey. In addition, no physical barrier like rivers or high mountains isolated the location of all three sites, and it is likely that the presence of cats may threaten native giant rats and melomys, skinks, and many ground dwelling birds like *Gallicolumba* sp ground doves in all areas.

Both *Solomys ponceleti* and *S. salebrosus* rats are said to be present in the area. Hunters have killed and eaten both species in the Sirebe forests. I have spotlighted *S. salebrosus* in an adjacent forest area to Sirebe at Padezaka land. Two individuals were spotlighted in July 2008.

* We spotlighted an individual near Vuri land. It was perched in an overhanging tree over a stream. The individual was seen scurrying away from a ficus tree where we assume it had be feeding in the early evening.

Appendix 3

Table 3: A summary of amphibians in three study sites, Sirebe, Vuri and Kubongava.

Common names	Scientific names	Sirebe	Vuri	Kubongava
Solomon Islands eyelash frog	*Ceratobatrachus guentheri*	X, n, c	X, n, c	X, n, c
Treasury Island tree frog	*Litoria thesaurensis*		X, n, c	
Solomon wrinkled ground frog	*Platymantis solomonis*	X, n, c, em	X, n, c, em	X, n, c, em
Weber's wrinkled ground frog	*Platymantis weberi*	X, n, c, em	X, n, c, em	X, n, c, em
Necker's wrinkled ground frog	*Platymantis neckeri*	X, n, c	X, n, c	X, n, c
Solomon giant tree frog	*Platymantis guppyi*	X, n, c	X, n, c	X, n, c
Giant webbed frog	*Discodeles guppyi*	X, n, c		
Malukuna webbed frog	*Discodeles malukuna*		X, n	
Warty webbed frog	*Discodeles bufoniformis*	X, n		
Elegant sticky toed frog	*Brachylodes elegans*	X, n, c	X, n, c	X, n, c
Fauro sicky toed frog	*Brachylodes vertebralis*	X, n, c	X, n, c	X, n, c
Unknown sticky toed frog	*Brachylodes sp.*		X	
Solomon palm frog	*Palmatorappia solomonis*	X, n, c, em, vu	X, n, c, em, vu	

X = present i = information from informants and hunters pr = prehistoric introduction n = native
r = rare c = common en = endangered vu = vulnerable em = endemic to Solomon Islands

Appendix 4

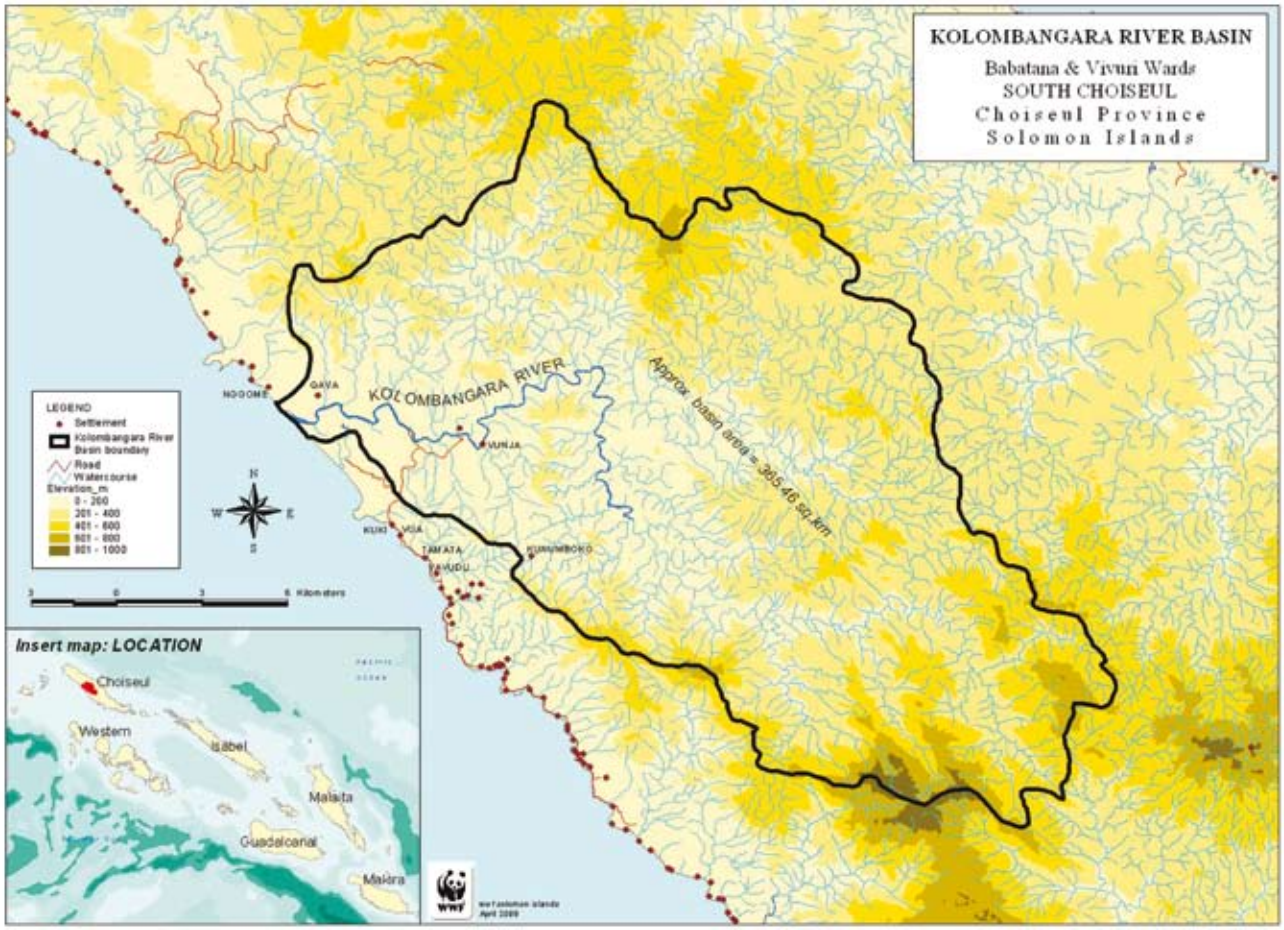
Table 4: A summary of reptiles in three study sites, Sirebe, Vuri, and Kubongava

Common names	Scientific names	Sirebe	Vuri	Kubongava
Solomon ring-tailed gecko	*Cyrtodactylus salomonensis*	X		
Stumped toed gecko	*Gehyra mutilata*	X	X	X
Oceanic gecko	*Gehyra oceanica*	X	X	
Sago gecko	*Gehyra vittatus*	X	X	
Brown-tailed copper striped skink	*Emoia cyanura*	X	X	X
Green bellied tree skink	*Emoia cyanogaster*			X
Pacific black skink	*Emoia nigra*	X	X	X
Prehensile tailed skink	*Corucia zebrata*	X	X	X
Mangrove monitor	*Varanus indicus*			X
Emerald tree skink	*Lamprolepsis smaragdina*	X	X	X
South Pacific tree boa	*Candoia bibroni*	X	X	X
Brown tree snake	*Boiga irregularis*	X	X	X
Solomon red krait	*Salomonelaps par*	X	X	X
Crocodiles		X		

X = present

Map 1: Map of Solomon Islands with Choiseul Island.

Map 2: Map of Choiseul and area of study



Map 3: Map of the proposed catchment of the Kolombangara River, which includes Sirebe, Vuri, and Kubongava lands, Southwest Choiseul.

Habitats


Ridge forest showing high stands of old growth trees, Sirebe land.


Licuala palm forest, Sirebe land.


Palm dominated valley, Kubongava land.


Campsite at Vuri, in lowland rainforest.


Mist and rain in Vuri's wet lowland rainforest


Ground orchid, Sirebe land.


Forest plant, Vuri land.


Stream in secondary forest, Vuri land.


Palm, Kubongava land. The valleys are dominated by palms.


Large forest tree, Sirebe land


Ridge forest, Kubongava land.


Palm, Kubongava land. The valleys are dominated by palms.

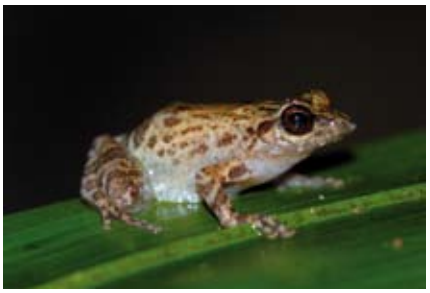
Frogs



Palmatorappia solomonis, an uncommon frog in the Solomon Islands. This is the only vulnerable listed species on the IUCN redlist. This species was heard calling at Pisuku, on the slopes below the main ridgeline above the proposed ranger station. On Bisilata these frogs were once again heard, seen and photographed. Three specimens were collected at Bisilata and photographed. I have previously seen these species at Sarelata Plateau on the foothills below Mt Maetambe the main summit on the spine of Choiseul Island. I have only seen this frog in primary and high overgrown secondary forests. This species appear to be a forest dependent species on Choiseul. I have not seen them nor heard them calling in open areas, not even forest edges, or village outliers. Other than Choiseul, Pal. solomonis is also found on Isabel and Guadalcanal.



There was a breeding pool for *Litoria thesaurensis* found at Bisilata. This is significant because of the congregation of breeding females and males found here. We did not encounter any species of *L. thesaurensis* at both Pisuku and Kombongava. The pool at Bisilata is found in secondary forests, and dominated by *Alpinia pupurata* gingers around the bank.




Brachylodes vertebralis, is a small frog. These were heard calling in low shrubs and in palm trees. These are some of the most abundant of frogs in the Solomon Islands. They are able to live in open areas, old gardens, especially on ferns, and in secondary forests. Although their numbers in disturbed forests are noticeably lower than that in primary or overgrown secondary forests. *Brachylodes vertebralis* are forest generalists although prefering primary or tall overgrown secondary forests to garden areas, or open forested areas or secondary forests.

Platymantis neckeri, Vuri.

Platymantis weberi, Vuri.

Platymantis guppyi

Platymantis guppyi



Platymantis solomonis (**above**) is the most widespread and abundant species of frog occurring in the Solomon Islands. It was recorded in all three sites. In some areas they were found even in degraded forests. I heard them calling in garden areas, teak plots, *Metroxylon* dominated areas, grasslands, pineapple patches, and sweet potato patches around Sasamunqa, and along the Sasamunqa stream. *P. solomonis* is one of four species that is endemic to Solomon Islands. On Choiseul compared to other islands within the New Georgian Islands and Guadalcanal the individuals are generally larger. *P. solomonis* is a terrestrial breeding oviparous frog. The female produces eggs that develop and hatch once being expelled from the body.



Ceratobatrachus guentheri a common ground frog on Choiseul. Here they display extreme colour morphologies, and it is not clear whether this is influenced by diet, environment, or genetic variation, or a combination of all these factors. This colour difference between individuals is not as striking on other islands within its natural range, like Guadalcanal or within the New Georgian Islands as it is on Choiseul.

Discodeles guppyi is the largest frog in the Solomons. It is found along streams and river banks.

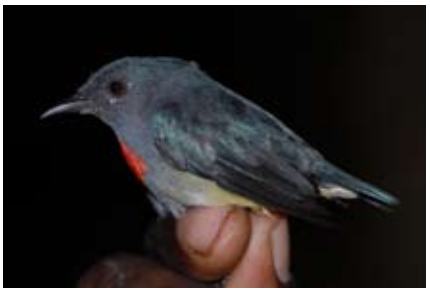
Discodeles buforniformis is smaller the *D. guppyi*. It's characteristic warty back and shorter legs, allows it to be easily distinguished from other *Discodeles* frogs.

Discodeles malukunua is smallest of the *Discodeles* frogs.

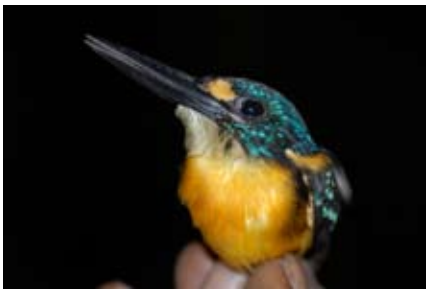

Brachylodes elegans. This is a small tree frog. These are common frogs there were heard calling in all three protected areas. These are mostly forest species, but are commonly forest generalists as well. They are found in secondary forests, gardens, bananas plots, and river edges.

Birds

Dusky myzomela (*Myzomela larfargie*) was only caught at Sirebe in transitional forest from tall secondary to primary forest.



Midget flowerpecker (*Dicaeum aeneum aneum*) was only netted in closed forest, both primary and tall secondary forest at Kubongava. These are a very small bird and abundant in the forest understorey. There were many around flowering *Alpinia pupurata* gingers and flower plants.



Variable kingfisher (*Ceyx lepidus*), Sirebe forests. The subspecies meeki is endemic to Choiseul and Isabel. This kingfisher will likely be named as a full species endemic to Choiseul and Isabel.

Male Golden whistler (*Pachycephalus pectoralis*).

White winged fantail *(Rhipidura cockerelli*), Sirebe land. The subspecies *interposita* is endemic to Choiseul and Isabel. This species is classified as near threatened by Birdlife International as its population has been declining.

Female Golden whistler (*Pachycephalus pectoralis*).

Black and White Monarch (*Monarcha barbatus*). This species is listed as near threatened because of declining populations.

Female superb fruit dove (*Ptilinopus superbus*).

Pigmy parrot, Sirebe. This is one of the smallest parrots in the Solomon Islands.

Mammals

Woodfords blossum bat (*Melonycteris woodfordi*) (**above**), is a common bat in both lowland and highland areas. I have netted this bat on the slopes of Mt Maetambe in the interior of Choiseul. These bats feed on nectar and flowering plants. Occasionally they may be caught in secondary disturbed areas.

Solomon tube nosed bat (*Nyctimene bougainville*) (**above and right**). These bats were caught in Sirebe, in primary forests. They feed on nectar and flowering plants, insects and other small invertebrates.

Giant horseshoe bat (*Hipposideros dinops*), Kubongava. Although widely distributed, we only caught one individual at Kubongava land. There are a big horseshoe bat and very active.

Northern blossum bat (*Macroglossus minimus*), Sirebe. This is a common bat throughout the Solomon Islands.

Bougainville giant rat (*Solomys salebrosus*), endemic to Bougainville and Choiseul Island. This photo was taken near Vuri land, and just outside of the main village of Sasamunqa. These are entirely arboreal rats, living almost all their lives in the tree. Notice the large feet and foot pads, and the long tail, that is used as a fifth limb while climbing. These giant rats are currently listed as endangered owing to declining populations, threats posed by cats and introduced animals, the felling of trees by industrial logging and by locals to make way for gardens. We think however, that cats pose the greatest danger to the extirpation of these species in certain areas. Feral cats are widespread on Choiseul, and said to be abundant on Sirebe land and perhaps Vuri.

Reptiles

Originally identified as ring-tailed gecko (*Cyrtodactylus louisiadensis*) this large gecko in the Solomons is now described as a seperate species *Cyrtodactylus salomonensis*. This species was only sighted in large intact primary forest. They are mostly arboreal, but I have encountered them on the forest floor as well foraging for insects.

Corucia zebrata, Choiseul. This is the largest arboreal skink in the world.

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July 2009